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In cooperation with
North Carolina Department
of Environment, Health,
and Natural Resources;
North Carolina Agricultural
Research Service; North
Carolina Cooperative
Extension Service;
Richmond Soil and Water
Conservation District; and
Richmond County Board
of Commissioners

Soil Survey of Richmond County, North Carolina



How To Use This Soil Survey

General Soil Map

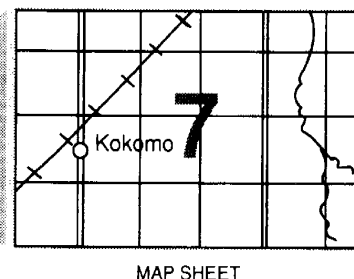
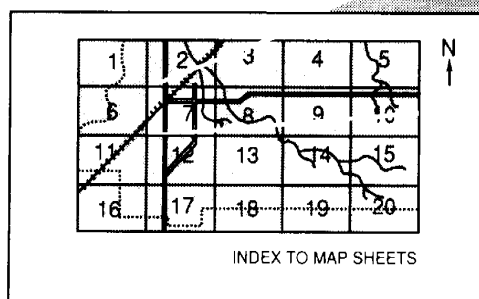
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

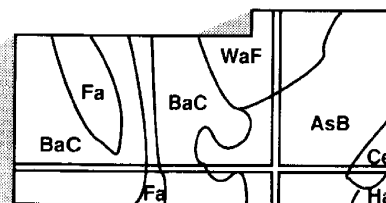
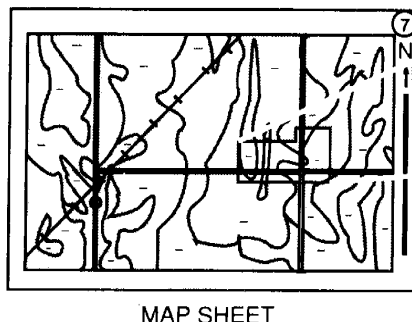
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the North Carolina Agricultural Research Service, and local agencies. The Natural Resources Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1991. Soil names and descriptions were approved in 1995. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This soil survey was made cooperatively by the Natural Resources Conservation Service; the North Carolina Department of Environment, Health, and Natural Resources; the North Carolina Agricultural Research Service; the North Carolina Cooperative Extension Service; the Richmond Soil and Water Conservation District; and the Richmond County Board of Commissioners. It is part of the technical assistance furnished to the Richmond Soil and Water Conservation District. The Richmond County Board of Commissioners provided financial assistance for the survey.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

This soil survey updates the survey of Richmond County published in 1912 (10). It provides more detailed maps on aerial photographs and contains more interpretive information.

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Cover: A peach orchard in an area of Wakulla and Candor soils, 0 to 8 percent slopes. Peach orchards, cropland of small grains, and hayland of improved bermudagrass are important agricultural uses for sandy soils in the Sandhills region of Richmond County.

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Issued 1999

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AuC—Ailey-Urban land complex, 8 to 15 percent slopes	24	MeB2—Mayodan-Exway complex, 2 to 8 percent slopes, eroded	53
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Foreword

This soil survey contains information that can be used in land-planning programs in Richmond County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the North Carolina Cooperative Extension Service.

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Soil Survey of Richmond County, North Carolina

By Steven T. Evans, Natural Resources Conservation Service

Soils surveyed by John R. Davis, Steven T. Evans, Willie E. Spruill, and R. Barry Ward, Natural Resources Conservation Service, and Vincent E. Lewis, North Carolina Department of Environment, Health, and Natural Resources

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
North Carolina Department of Environment, Health, and Natural Resources;
North Carolina Agricultural Research Service; North Carolina Cooperative Extension Service; Richmond Soil and Water Conservation District; and Richmond County Board of Commissioners

RICHMOND COUNTY is in the south-central part of North Carolina (fig. 1). It lies on the physiographic boundary between the Coastal Plain and the Piedmont. It has a total area of 306,938 acres.

In 1990, the population of Richmond County was 44,518 (18). Rockingham, the county seat, had a population of 9,399. The county is predominantly rural.

General Nature of the County

This section gives general information about Richmond County. It describes the history and development; physiography, relief, and drainage; water supply; and climate.

History and Development

Richmond County was established in 1779. It was named in honor of Charles Lennox, Duke of Richmond. Rockingham, the county seat, was also established in 1779. It was named in honor of Charles Watson Wentworth, Marquis of Rockingham (7).

Thousands of years before the Europeans arrived in the survey area, American Indians inhabited land along the Pee Dee River. In later times, the Indians farmed this land. In the 1730's, large numbers of people of Scotch, Scotch-Irish, German, and English descent settled the survey area. Their main occupation was farming.

Corn and small grains were the major crops grown in

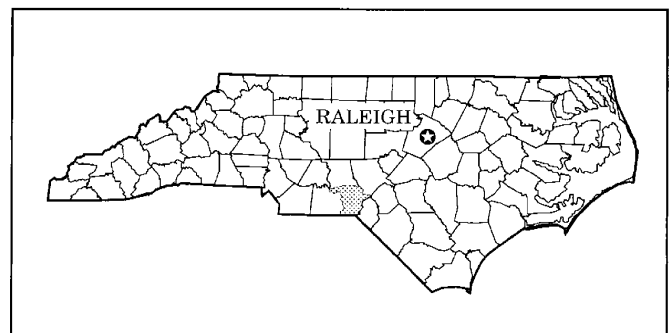


Figure 1.—Location of Richmond County in North Carolina.

the county prior to the Civil War. In the mid-1800's, people began using the fast-moving waters of the Piedmont streams to power cotton gins and textile mills. The textile industry grew, becoming an important part of the county's economy. The railroad came to Richmond County during the mid-1800's and helped the establishment of many small towns throughout the county. Cotton became the major crop after the Civil War and remained the major crop until the mid-1900's. In 1900, the Pee Dee River was harnessed to produce electricity (8).

Today, textiles remain important to the county's economy. Poultry production is becoming increasingly important to the county's agricultural economy. A lot of growth has occurred in the poultry industry in Richmond

County during the past few years, and more growth is anticipated. The railroad continues to contribute significantly to the county's economy. Hamlet, the second largest town in the county, is a major railroad hub in the southeastern part of the United States.

Physiography, Relief, and Drainage

Richmond County is situated on the Fall Line in the south-central part of North Carolina. The survey area has three distinct physiographic regions, namely the Piedmont, the Sandhills, and the Coastal Plain. The Piedmont region is in the western part of the county, and the Sandhills and Coastal Plain regions are in the eastern and central parts. The transitional zones between the Piedmont region and the Sandhills and Coastal Plain regions are commonly irregular and broad and as much as 3 miles in width.

The Piedmont region of the county is located near or adjacent to the Pee Dee River and its larger tributaries. The landscape is well dissected and typically has narrow to moderately broad, gently sloping or strongly sloping ridges and long, moderately steep or steep side slopes. Elevation ranges from about 90 feet above sea level near the Pee Dee River to about 550 feet near Covington. Several bedrock types underlay the Piedmont region, including Carolina Slate, gabbro, granite, and Triassic mudstone, siltstone, and sandstone.

The Sandhills region of the county is located in the eastern two-thirds of the county. The Sandhills are gently rolling and slightly or moderately dissected. Slopes range from nearly level to moderately steep. Elevation ranges from about 180 feet above sea level in the southwestern part of the county to about 620 feet in the north-central part.

The Coastal Plain region of the county is located in the west-central and southwestern parts of the county. It is nearly level or gently sloping and only slightly dissected. Elevation ranges from about 200 feet above sea level in the southwestern part of the county to about 350 feet in the west-central part.

Nearly three-fourths of Richmond County is drained by the Pee Dee River and its tributaries. The larger tributaries include Little River, Mountain Creek, Cartledges Creek, Hitchcock Creek, and Marks Creek. Drowning Creek, located along the northeastern boundary of the county, drains most of the remaining quarter of the county.

Water Supply

Supplies of ground water are adequate in most parts of Richmond County. All incorporated towns in Richmond County have municipal water systems. Rural residences rely on drilled or bored wells for water supplies. Irrigation

water for agriculture is supplied by numerous ponds and natural bodies of water.

Climate

In Richmond County, summer is hot and generally humid because of the moist, maritime air. Winter is moderately cold but of short duration because the mountains to the west protect the area against many cold waves. Precipitation is evenly distributed throughout the year and generally occurs in amounts adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Hamlet, North Carolina, in the period 1950 to 1993. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 43 degrees F and the average daily minimum temperature is 31 degrees. The lowest temperature on record, which occurred on January 21, 1985, is -6 degrees. In summer, the average temperature is 78 degrees and the average daily maximum temperature is 90 degrees. The highest recorded temperature, which occurred on August 21, 1983, is 107 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total average annual precipitation is about 47.4 inches. Of this, 25.7 inches, or about 54 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 13.9 inches. The heaviest 1-day rainfall during the period of record was 7.61 inches on October 15, 1954. Thunderstorms occur on about 41 days each year.

The average seasonal snowfall is about 3 inches. The greatest snow depth at any one time during the period of record was 13 inches. On the average, 1 day of the year has at least 1 inch of snow on the ground.

The average relative humidity in midafternoon is about 54 percent. Humidity is higher at night, and the average at dawn is about 83 percent. The sun shines 68 percent of the time possible in summer and 57 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 9 miles per hour, in spring.

Every few years in winter, heavy snow covers the ground for a few days to a week. Every few years in late summer or in autumn, a tropical storm moving inland from

the Atlantic Ocean causes extremely heavy rainfall for 1 to 3 days.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in Richmond County. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the material from which the soil formed.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify the soils. After describing the soils and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely

defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. The data from these analyses and tests and from field-observed characteristics and soil properties are used to predict behavior of the soils under different uses. Interpretations are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a relatively high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in accurately locating boundaries.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Ailey-Wakulla-Candor

Nearly level to moderately steep, well drained to somewhat excessively drained soils that have a 20- to 40-inch-thick sandy surface layer and a sandy or loamy subsoil; on uplands of the Sandhills

Setting

Location in the survey area: Eastern part of the county

Landform: Uplands of the Sandhills

Landscape position: Broad ridges and side slopes

Slope range: 0 to 25 percent

Extent and Composition

Percent of the survey area: 67

Ailey soils—35 percent

Wakulla soils—24 percent

Candor soils—23 percent

Minor soils—18 percent

Soil Characteristics

Ailey

Surface layer: Brown loamy sand

Subsurface layer: Very pale brown loamy sand

Subsoil: Upper part—brownish yellow sandy loam; middle part—reddish yellow sandy clay loam; lower part—reddish yellow sandy loam

Underlying material: Mottled strong brown, light red, and light gray sandy loam

Depth class: Very deep

Drainage class: Well drained

Depth to high water table: Generally greater than 6 feet; 4 to 6 feet where the underlying material is wet

Slope range: 0 to 25 percent

Parent material: Unconsolidated marine sediments

Wakulla

Surface layer: Brown sand

Subsurface layer: Brownish yellow sand

Subsoil: Yellowish brown loamy sand

Underlying material: Brownish yellow sand, yellow sand, and very pale brown sand

Depth class: Very deep

Drainage class: Somewhat excessively drained

Depth to high water table: Greater than 6 feet

Slope range: 0 to 15 percent

Parent material: Unconsolidated marine sediments

Candor

Surface layer: Grayish brown sand

Subsurface layer: Light yellowish brown sand

Subsoil: Upper part—yellowish brown loamy sand; middle part—yellowish brown and brownish yellow sand; lower part—strong brown sandy loam and yellowish red sandy clay loam

Depth class: Very deep

Drainage class: Somewhat excessively drained

Depth to high water table: Greater than 6 feet

Slope range: 0 to 15 percent

Parent material: Unconsolidated marine sediments

Minor soils

- The moderately well drained Pelion soils near drainageways
- The very poorly drained Johnston soils and the somewhat poorly drained Chewacla soils on flood plains
- The well drained Masada soils on ridges and side slopes near the larger streams

- The very poorly drained Paxville soils adjacent to flood plains and drainageways
- The well drained Uwharrie soils on the lower side slopes near drainageways
- The well drained Orangeburg soils, which occur in random areas

Use and Management

Major Uses: Woodland, pasture and hayland, cropland, and urban development

Cropland

Management concerns: Droughtiness, erosion, slope, excessive sandiness, and leaching of nutrients

Pasture and hayland

Management concerns: Ailey—droughtiness, slope, erosion, and leaching of nutrients; Wakulla and Candor—droughtiness, erosion, and leaching of nutrients

Woodland

Management concerns: Ailey—erosion, equipment limitations, and seedling survival; Wakulla and Candor—seedling survival and equipment limitations

Urban development

Management concerns: Ailey—droughtiness, erosion, restricted permeability, and slope; Wakulla and Candor—rapid permeability, slope, erosion, and droughtiness

2. Uwharrie-Badin

Gently sloping and strongly sloping, well drained soils that have a loamy surface layer and a clayey subsoil; on Piedmont uplands

Setting

Location in the survey area: Western part of the survey area

Landform: Piedmont uplands

Landscape position: Broad ridges, narrow ridges, and side slopes

Slope range: 2 to 15 percent

Extent and Composition

Percent of the survey area: 7

Uwharrie soils—53 percent

Badin soils—31 percent

Minor soils—16 percent

Soil Characteristics

Uwharrie (eroded)

Surface layer: Reddish yellow clay loam

Subsoil: Upper part—reddish yellow silty clay loam; middle part—red clay; lower part—red silty clay loam

Underlying material: Weak red silt loam

Depth class: Very deep

Drainage class: Well drained

Depth to high water table: Greater than 6 feet

Slope range: 2 to 25 percent

Parent material: Residuum weathered from Carolina Slate rock, such as phyllite and schist

Badin

Surface layer: Yellowish brown channery silt loam

Subsoil: Upper part—yellowish red silty clay loam; lower part—red silty clay

Bedrock: Mottled brownish yellow and red soft, weathered, highly fractured slate bedrock

Depth class: Moderately deep

Drainage class: Well drained

Depth to high water table: Greater than 6 feet

Slope range: 2 to 55 percent

Parent material: Residuum weathered from Carolina Slate rock, such as phyllite and schist

Minor soils

- The well drained to excessively drained Goldston soils, which occur in random areas on knobs, shoulders, and the steeper side slopes
- The well drained Ailey soils, which occur in random areas on the higher ridges
- The well drained Riverview soils on flood plains
- The well drained Masada soils on ridges and the upper side slopes near the larger streams
- The well drained Turbeville soils on ridges near the larger streams
- The well drained Enon and Wynott soils, which occur in random areas

Use and Management

Major Uses: Woodland, pasture and hayland, and cropland

Cropland

Management concerns: Uwharrie—erosion and tilth; Badin—erosion, tilth, and droughtiness

Pasture and hayland

Management concerns: Uwharrie—erosion and compaction; Badin—erosion, compaction, and droughtiness

Woodland

Management concerns: Uwharrie—erosion, equipment limitations, and seedling survival; Badin—erosion, equipment limitations, windthrow hazard, and seedling survival

Urban development

Management concerns: Uwharrie—slope, erosion, restricted permeability, and shrink-swell potential; Badin—depth to bedrock, slope, erosion, restricted permeability, and shrink-swell potential

3. Mayodan-Creedmoor

Gently sloping to steep, well drained to somewhat poorly drained soils that have a loamy surface layer and a clayey subsoil; on Piedmont uplands

Setting

Location in the survey area: Northwestern and west-central parts of the county

Landform: Piedmont uplands

Landscape position: Ridges, side slopes, and broad upland flats

Slope range: 2 to 35 percent

Extent and Composition

Percent of the survey area: 5

Mayodan soils—49 percent

Creedmoor soils—18 percent

Minor soils—33 percent

Soil Characteristics

Mayodan (eroded)

Surface layer: Strong brown sandy clay loam

Subsurface layer: Yellowish red sandy clay loam

Subsoil: Upper part—red clay; middle part—red silty clay; lower part—red silty clay loam

Underlying material: Dark red silt loam that has pockets of silty clay loam

Depth class: Very deep

Drainage class: Well drained

Depth to high water table: Greater than 6 feet

Slope range: 2 to 35 percent

Parent material: Residuum weathered from Triassic rock, such as siltstone and mudstone

Creedmoor

Surface layer: Brown fine sandy loam

Subsurface layer: Light brownish yellow fine sandy loam

Subsoil: In sequence downward, brownish yellow loam; yellowish brown clay loam; mottled yellowish brown,

dark red, yellowish red, and light gray clay loam; and mottled yellowish brown, light gray, and dark red clay loam

Underlying material: Dark reddish brown silt loam

Depth class: Very deep

Drainage class: Moderately well drained to somewhat poorly drained

Depth to high water table: 1.5 to 2.0 feet

Slope range: 2 to 8 percent

Parent material: Residuum weathered from Triassic rock, such as siltstone and mudstone

Minor soils

- The well drained Masada and Davidson soils on ridges and the upper side slopes near the larger streams and rivers
- The moderately well drained Peawick soils on the lower broad flats
- The well drained Exway soils adjacent to streams or flood plains
- The well drained Enon and Wynott soils, which occur in random areas
- The well drained to excessively drained Pinkston soils, which occur in random areas on the higher ridges
- The well drained Ailey soils, which occur in random areas on the higher ridges
- The somewhat poorly drained Hornsboro soils on the lower, broad flats adjacent to streams or flood plains
- The somewhat poorly drained Chewacla soils on flood plains

Use and Management

Major Uses: Woodland, pasture and hayland, and cropland

Cropland

Management concerns: Mayodan—erosion, tilth, and slope; Creedmoor—wetness and erosion

Pasture and hayland

Management concerns: Mayodan—slope, erosion, and compaction; Creedmoor—erosion and compaction

Woodland

Management concerns: Mayodan—erosion, seedling survival, and equipment limitations; Creedmoor—few limitations

Urban development

Management concerns: Mayodan—restricted permeability, slope, erosion, and shrink-swell potential; Creedmoor—wetness, restricted permeability, and shrink-swell potential

4. Badin-Goldston-Uwharrie

Moderately steep and steep, well drained to excessively drained soils that have a loamy surface layer and a loamy or clayey subsoil; on Piedmont uplands

Setting

Location in the survey area: Western part of the county

Landform: Piedmont uplands

Landscape position: Side slopes and narrow ridge crests

Slope range: 15 to 55 percent

Extent and Composition

Percent of the survey area: 4

Badin soils—34 percent

Goldston soils—31 percent

Uwharrie soils—23 percent

Minor soils—12 percent

Soil Characteristics

Badin

Surface layer: Yellowish brown channery silt loam

Subsoil: Upper part—yellowish red silty clay loam; lower part—red silty clay

Bedrock: Mottled brownish yellow and red soft, weathered, highly fractured slate bedrock

Depth class: Moderately deep

Drainage class: Well drained

Depth to high water table: Greater than 6 feet

Slope range: 2 to 55 percent

Parent material: Residuum weathered from Carolina Slate rock, such as phyllite and schist

Goldston

Surface layer: Yellowish brown very channery silt loam

Subsoil: Yellowish brown very channery silt loam

Bedrock: Upper part—weak red soft, weathered, highly fractured slate bedrock; lower part—hard, unweathered slate bedrock

Depth class: Shallow

Drainage class: Well drained to excessively drained

Depth to high water table: Greater than 6 feet

Slope range: 8 to 55 percent

Parent material: Carolina Slate rock, such as phyllite and schist

Uwharrie

Surface layer: Dark yellowish brown loam

Subsoil: Upper part—red clay; lower part—yellowish red silty clay loam

Underlying material: Yellowish red silt loam

Depth class: Very deep

Drainage class: Well drained

Depth to high water table: Greater than 6 feet

Slope range: 2 to 25 percent

Parent material: Residuum weathered from Carolina Slate rock, such as phyllite and schist

Minor soils

- The well drained Ailey soils, which occur in random areas on the higher narrow ridges
- The well drained Masada soils, which occur in random areas on the higher ridges and the upper side slopes near the larger streams
- The somewhat poorly drained Chewacla soils and the well drained Riverview soils on flood plains

Use and Management

Major Uses: Woodland and pasture

Cropland

Management concerns: Badin and Goldston—slope, erosion, and droughtiness; Uwharrie—slope and erosion

Pasture and hayland

Management concerns: Badin—slope, compaction, erosion, and droughtiness; Goldston—slope, erosion, and droughtiness; Uwharrie—slope, erosion, and compaction

Woodland

Management concerns: Badin—erosion, equipment limitations, and windthrow hazard; Goldston—equipment limitations, erosion, seedling survival, and windthrow hazard; Uwharrie—equipment limitations and erosion

Urban development

Management concerns: Badin—slope, erosion, depth to bedrock, restricted permeability, and shrink-swell potential; Goldston—slope, erosion, depth to bedrock, and droughtiness; Uwharrie—slope, erosion, restricted permeability, and shrink-swell potential

5. Peawick-Hornsboro

Nearly level and gently sloping, moderately well drained to somewhat poorly drained soils that have a loamy surface layer and a clayey subsoil; on old stream terraces

Setting

Location in the survey area: Northwestern part of the county

Landform: River or stream valleys

Landscape position: Broad stream terraces

Slope range: 0 to 6 percent

Extent and Composition

Percent of the survey area: 4

Peawick soils—62 percent

Hornsboro soils—12 percent

Minor soils—26 percent

Soil Characteristics

Peawick

Surface layer: Brown fine sandy loam

Subsoil: In sequence downward, olive yellow loam; brownish yellow clay loam; brownish yellow clay; mottled red, strong brown, brownish yellow, and light gray clay; mottled red, strong brown, light gray, and brownish yellow clay; and mottled red, strong brown, and light gray clay that has pockets of sandy clay loam

Depth class: Very deep

Drainage class: Moderately well drained

Depth to high water table: 1.5 to 3.0 feet

Slope range: 0 to 6 percent

Parent material: Old alluvium

Hornsboro

Surface layer: Grayish brown silt loam

Subsoil: In sequence downward, light brownish gray silty clay loam; yellowish brown silty clay; yellowish brown clay; and dark yellowish brown clay loam that has pockets of clay

Underlying material: Mottled pale brown and light gray clay loam

Depth class: Very deep

Drainage class: Somewhat poorly drained

Depth to high water table: 1.0 to 1.5 feet

Slope range: 0 to 2 percent

Parent material: Old alluvium

Minor soils

- The well drained McQueen soils, which occur in random areas on the slightly higher broad ridges
- The somewhat poorly drained Chewacla soils on flood plains
- The well drained Masada soils, which occur in random areas on the steeper ridges and side slopes
- The well drained Turbeville soils and the well drained Mayodan soils, which occur in random areas on the higher ridges
- The moderately well drained to somewhat poorly drained Creedmoor soils, which occur in random areas in the slightly higher landscape positions

Use and Management

Major Uses: Woodland, cropland, and pasture and hayland

Cropland

Management concerns: Peawick—wetness and erosion; Hornsboro—wetness

Pasture and hayland

Management concerns: Peawick—wetness, erosion, and compaction; Hornsboro—wetness and compaction

Woodland

Management concerns: Peawick—equipment limitations; Hornsboro—equipment limitations, seedling survival, and windthrow hazard

Urban development

Management concerns: Wetness, restricted permeability, and shrink-swell potential

6. Turbeville-Norfolk-Orangeburg

Nearly level and gently sloping, well drained soils that have a loamy surface layer and a clayey subsoil or have a sandy surface layer and a loamy subsoil; on uplands and high stream terraces of the Coastal Plain

Setting

Location in the survey area: Western part of the county

Landform: Uplands of the Coastal Plain and river or stream valleys

Landscape position: Broad ridges and high stream terraces

Slope range: 0 to 8 percent

Extent and Composition

Percent of the survey area: 4

Turbeville soils—49 percent

Norfolk soils—22 percent

Orangeburg soils—12 percent

Minor soils—17 percent

Soil Characteristics

Turbeville

Surface layer: Reddish brown sandy loam

Subsoil: Upper part—red sandy clay; middle part—red clay; lower part—red sandy clay

Depth class: Very deep

Drainage class: Well drained

Depth to high water table: Greater than 6 feet

Slope range: 0 to 8 percent
Parent material: Old alluvium

Norfolk

Surface layer: Brown loamy sand
Subsurface layer: Light yellowish brown loamy sand
Subsoil: In sequence downward, brownish yellow sandy loam; yellowish brown sandy clay loam; strong brown sandy clay loam; mottled yellowish brown, strong brown, red, and very pale brown sandy clay loam; and mottled yellowish brown, strong brown, red, and light gray sandy clay loam

Depth class: Very deep
Drainage class: Well drained
Depth to high water table: 4 to 6 feet
Slope range: 0 to 6 percent
Parent material: Unconsolidated marine sediments

Orangeburg

Surface layer: Brown loamy sand
Subsoil: Upper part—yellowish red sandy loam; middle part—red sandy clay loam; lower part—red sandy loam

Depth class: Very deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 0 to 6 percent
Parent material: Unconsolidated marine sediments

Minor soils

- The well drained Masada soils, which occur in random areas on side slopes
- The well drained Ailey soils and the somewhat excessively drained Candor and Wakulla soils, which occur in random areas on the higher ridges and side slopes
- The very poorly drained Johnston soils on flood plains
- The well drained Uwharrie soils on the lower side slopes near drainageways

Use and Management

Major Uses: Cropland, pasture and hayland, woodland, and urban development

Cropland

Management concerns: Erosion

Pasture and hayland

Management concerns: Turbeville—erosion and compaction; Norfolk and Orangeburg—erosion

Woodland

Management concerns: No significant limitations

Urban development

Management concerns: Turbeville—restricted permeability and shrink-swell potential; Norfolk—slight wetness; Orangeburg—no significant limitations

7. Pacolet-Cullen

Strongly sloping to steep, well drained soils that have a loamy surface layer and a clayey subsoil; on Piedmont uplands

Setting

Location in the survey area: Southwestern and west-central parts of the county
Landform: Piedmont uplands
Landscape position: Narrow ridges and side slopes
Slope range: 8 to 35 percent

Extent and Composition

Percent of the survey area: 3
 Pacolet soils—44 percent
 Cullen soils—20 percent
 Minor soils—36 percent

Soil Characteristics

Pacolet

Surface layer: Brown gravelly sandy loam
Subsurface layer: Brown gravelly sandy loam
Subsoil: Upper part—red sandy clay; middle part—red sandy clay; lower part—red sandy clay loam
Underlying material: Multicolored saprolite that has sandy clay loam texture
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 8 to 35 percent
Parent material: Residuum weathered from felsic rock, such as granite

Cullen

Surface layer: Brown fine sandy loam
Subsoil: Upper part—red clay; lower part—red clay loam
Underlying material: Red and reddish yellow loam
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: Greater than 6 feet
Slope range: 15 to 35 percent
Parent material: Residuum weathered from felsic and mafic rock, such as granite and gabbro

Minor soils

- The well drained Masada and Ailey soils, which occur in

random areas on the higher ridges and the upper side slopes

- The well drained Davidson soils on the higher ridges and side slopes
- The somewhat poorly drained Chewacla soils on flood plains
- The well drained Wynott soils, which occur in random areas on side slopes
- The well drained Uwharrie soils, which occur in random areas on ridges and side slopes
- The well drained McQueen soils on the lower stream terraces near the larger streams

Use and Management

Major Uses: Woodland and pasture and hayland

Cropland

Management concerns: Pacolet—erosion, slope, and gravelly surface layer; Cullen—erosion and slope

Pasture and hayland

Management concerns: Pacolet—slope, erosion, compaction, and gravelly surface layer; Cullen—slope, erosion, and compaction

Woodland

Management concerns: Erosion and equipment limitations

Urban development

Management concerns: Pacolet—erosion, slope, gravelly surface layer, and restricted permeability; Cullen—erosion, slope, restricted permeability, and shrink-swell potential

8. Chewacla-Riverview

Nearly level, somewhat poorly drained and well drained soils that have a loamy surface layer and a loamy subsoil; on flood plains

Setting

Location in the survey area: Central and western parts of the county

Landform: River or stream valleys

Landscape position: Flood plains

Slope range: 0 to 2 percent

Extent and Composition

Percent of the survey area: 3

Chewacla soils—80 percent

Riverview soils—16 percent

Minor soils—4 percent

Soil Characteristics

Chewacla

Surface layer: Yellowish brown loam

Subsoil: In sequence downward, brown loam; mottled yellowish brown, dark brown, and light gray loam; mottled strong brown, very pale brown, and light gray clay loam; and light brownish gray clay loam

Depth class: Very deep

Drainage class: Somewhat poorly drained

Depth to high water table: 0.5 foot to 1.5 feet

Slope range: 0 to 2 percent

Parent material: Alluvium

Riverview

Surface layer: Dark yellowish brown loam

Subsoil: Yellowish brown loam

Underlying material: Yellowish brown sandy loam that has strata of silty clay loam

Depth class: Very deep

Drainage class: Well drained

Depth to high water table: 3 to 5 feet

Slope range: 0 to 2 percent

Parent material: Alluvium

Minor soils

- The moderately well drained Peawick soils and the somewhat poorly drained Hornsboro soils in the slightly higher landscape positions

Use and Management

Major Uses: Woodland, pasture and hayland, and cropland

Cropland

Management concerns: Chewacla—wetness and flooding; Riverview—flooding

Pasture and hayland

Management concerns: Chewacla—wetness and flooding; Riverview—flooding

Woodland

Management concerns: Chewacla—equipment limitations, seedling survival, and windthrow hazard; Riverview—few limitations

Urban development

Management concerns: Flooding and wetness

9. Johnston

Nearly level, very poorly drained soils that have a loamy surface layer and loamy to sandy underlying material; on flood plains of the Coastal Plain and Sandhills

Setting

Location in the survey area: Eastern and southern parts of the county

Landform: River or stream valleys

Landscape position: Flood plains

Slope range: 0 to 2 percent

Extent and Composition

Percent of the survey area: 2

Johnston soils—90 percent

Minor soils—10 percent

Soil Characteristics

Johnston

Surface layer: Black mucky loam

Subsurface layer: Very dark grayish brown fine sandy loam

Underlying material: Grayish brown sandy loam that has pockets of loamy sand and light gray loamy sand

Depth class: Very deep

Drainage class: Very poorly drained

High water table: 1.0 foot above the soil surface to 1.5 feet below

Slope range: 0 to 2 percent

Parent material: Alluvium

Minor soils

- The moderately well drained Pelion soils and the well drained Ailey soils in the higher landscape positions
- The very poorly drained Paxville soils adjacent to flood plains

Use and Management

Major Uses: Woodland and pasture

Cropland

Management concerns: Flooding and wetness

Pasture and hayland

Management concerns: Wetness and flooding

Woodland

Management concerns: Equipment limitations and seedling survival

Urban development

Management concerns: Wetness and flooding

10. Masada

Strongly sloping and moderately steep, well drained soils that have a loamy surface layer and a clayey subsoil; on high stream terraces

Setting

Location in the survey area: Northwestern part of the county

Landform: River or stream valleys

Landscape position: High stream terraces

Slope range: 8 to 25 percent

Extent and Composition

Percent of the survey area: 1

Masada soils—81 percent

Minor soils—19 percent

Soil Characteristics

Masada

Surface layer: Strong brown sandy loam

Subsoil: Upper part—red sandy clay; middle part—red clay; lower part—mottled red, brownish yellow, and yellow sandy clay loam

Underlying material: Mottled red, brownish yellow, and pale brown sandy clay loam that has pockets of sandy clay

Depth class: Very deep

Drainage class: Well drained

Depth to high water table: Greater than 6 feet

Slope range: 8 to 25 percent

Parent material: Old alluvium

Minor Soils

- The well drained Ailey and Turbeville soils, which occur in random areas on the higher ridgetops
- The moderately well drained Peawick soils on the lower, broad ridges
- The somewhat poorly drained Chewacla soils on flood plains

Use and Management

Major Uses: Woodland, pasture and hayland, cropland, and urban development

Cropland

Management concerns: Slope and erosion

Pasture and hayland

Management concerns: Slope, erosion, and compaction

Woodland

Management concerns: Erosion and equipment limitations

Urban development

Management concerns: Slope, erosion, shrink-swell potential, and restricted permeability

Detailed Soil Map Units

The map units delineated on the detailed maps at the back of this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given under the heading "Use and Management of the Soils."

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. For example, the map unit Ailey loamy sand, 8 to 15 percent slopes, would be expected to include small areas where slopes are less than 8 percent or more than 15 percent. Generally, only those inclusions that are significant to use and management or that add to the user's understanding of the map unit concept are discussed.

Some included soils and miscellaneous areas have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The

included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Uwharrie clay loam, 8 to 15 percent slopes, eroded, is a phase of the Uwharrie series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Badin-Goldston complex, 8 to 15 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Wakulla and Candor soils, 0 to 8 percent slopes, is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, quarry, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

AaB—Ailey sand, moderately wet, 0 to 6 percent slopes

Setting

Landform: Uplands of the Sandhills and Coastal Plain

Landscape position: Lower ridges

Shape of areas: Oblong and irregular

Size of areas: 10 to more than 50 acres

Composition

Ailey soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 7 inches—grayish brown sand

Subsurface layer:

7 to 23 inches—light yellowish brown sand

Subsoil:

23 to 40 inches—brownish yellow sandy clay loam

40 to 46 inches—mottled brownish yellow and red sandy clay loam that has gray and yellow mottles

46 to 56 inches—mottled light gray, brownish yellow, and red sandy clay loam

Underlying material:

56 to 65 inches—mottled light gray, red, and yellow sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow in the lower part of the subsoil and in the underlying material

Available water capacity: Moderate

High water table: 4 to 6 feet below the soil surface; perched

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Severe

Hazard of water erosion: Slight

Slope class: Nearly level or gently sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The moderately well drained Pelion soils in low areas and near drainageways
- The somewhat excessively drained Wakulla and Candor soils, which generally are on the higher parts of the landscape but may occur in random areas throughout the landscape
- Moderately well drained soils that have a clayey subsoil and are in low areas and near drainageways
- Soils that have a surface layer more than 40 inches thick and that are on the higher parts of the landscape and along the outer edge of the map unit delineations
- Poorly drained soils along narrow drainageways

Use and Management

Major Uses: Woodland and cropland

Cropland

Suitability: Moderately suited

Management concerns: Droughtiness, erosion, leaching of nutrients, and excessive sandiness

Management measures and considerations:

- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions are necessary for the economic production of crops.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Using fertilizer in split applications helps to minimize leaching.
- Lime and fertilizer should be applied according to recommendations based on soil tests.
- Using low-pressure ground equipment helps to minimize surface slippage resulting from excessive sandiness.

Pasture and hayland*Suitability:* Well suited*Management concerns:* Droughtiness, erosion, and leaching of nutrients*Management measures and considerations:*

- Controlled grazing, sod management, and weed control help to maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Using fertilizer in split applications and according to recommendations based on soil tests helps to minimize leaching of nutrients and maintain fertility.

Woodland*Suitability:* Moderately suited*Productivity class:* Moderate*Management concerns:* Equipment limitations and seedling survival*Management measures and considerations:*

- Establishing filter strips of natural vegetation helps to minimize siltation and maintain water temperature along intermittent and perennial streams.
- The ground surface in filter strips should be disturbed as little as possible.
- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting.
- Tree varieties that are drought tolerant should be selected for planting.
- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.

Urban development*Suitability:* Moderately suited*Management concerns:* Restricted permeability, droughtiness, and wetness*Management measures and considerations:*

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Because of the droughtiness, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping can divert surface water and runoff away from structures.

Interpretive Groups*Land capability classification:* IIIs*Woodland ordination symbol:* 4S, based on longleaf pine as the indicator species**AcB—Ailey loamy sand, 0 to 8 percent slopes****Setting***Landform:* Uplands of the Sandhills and Coastal Plain*Landscape position:* Broad ridges and side slopes*Shape of areas:* Oblong and irregular*Size of areas:* 10 to more than 500 acres**Composition**

Ailey soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile*Surface layer:*

0 to 6 inches—brown loamy sand

Subsurface layer:

6 to 25 inches—very pale brown loamy sand

Subsoil:

25 to 33 inches—brownish yellow sandy loam that has strata of sandy clay loam

33 to 46 inches—reddish yellow sandy clay loam

46 to 55 inches—reddish yellow sandy loam

Underlying material:

55 to 65 inches—mottled strong brown, light red, and light gray sandy loam

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Well drained*Permeability:* Slow in the lower part of the subsoil and in the underlying material*Available water capacity:* Moderate*Depth to high water table:* Greater than 6 feet*Flooding:* None*Shrink-swell potential:* Low*Hazard of soil blowing:* Severe*Hazard of water erosion:* Slight*Slope class:* Nearly level or gently sloping*Depth to bedrock:* Greater than 60 inches**Inclusions***Contrasting inclusions:*

- The moderately well drained Pelion soils in low areas and near drainageways
- The somewhat excessively drained Wakulla and Candor soils, which generally are on the higher parts of the landscape or in random areas throughout the landscape

- Moderately well drained soils that have a clayey subsoil and that are in low areas and near drainageways
- Soils that have a surface layer more than 40 inches thick and that are on the higher parts of the landscape and along the outer edge of the map unit delineations
- Soils that have a surface layer less than 20 inches thick and that are on the steeper parts of the landscape or occur in random areas throughout the landscape
- Somewhat poorly drained soils in low areas and near drainageways
- Poorly drained soils along narrow drainageways

Use and Management

Major Uses: Woodland, cropland, pasture and hayland, and urban development

Cropland

Suitability: Moderately suited

Management concerns: Droughtiness, erosion, leaching of nutrients, and excessive sandiness

Management measures and considerations:

- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions are necessary for the economic production of crops (fig. 2).
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Using fertilizer in split applications helps to minimize leaching.
- Lime and fertilizer should be applied according to recommendations based on soil tests.
- Using low-pressure ground equipment helps to minimize surface slippage resulting from excessive sandiness.

Pasture and hayland

Suitability: Well suited

Management concerns: Droughtiness, erosion, and leaching of nutrients

Management measures and considerations:

- Controlled grazing, sod management, and weed control help to maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Using fertilizer in split applications and according to

recommendations based on soil tests helps to minimize leaching of nutrients and maintain fertility.

Woodland

Suitability: Moderately suited

Productivity class: Moderate

Management concerns: Equipment limitations and seedling survival

Management measures and considerations:

- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting.
- Tree varieties that are drought tolerant should be selected for planting.
- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability and droughtiness

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Because of the droughtiness, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.

Interpretive Groups

Land capability classification: IIIs

Woodland ordination symbol: 4S, based on longleaf pine as the indicator species

AcC—Ailey loamy sand, 8 to 15 percent slopes

Setting

Landform: Uplands of the Sandhills and Coastal Plain

Landscape position: Side slopes

Shape of areas: Long and narrow or irregular

Size of areas: 10 to more than 500 acres

Composition

Ailey soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 6 inches—brown loamy sand

Subsurface layer:

6 to 25 inches—very pale brown loamy sand



Figure 2.—Yellow squash on the droughty Alley loamy sand, 0 to 8 percent slopes. Irrigation is necessary to produce high yields of this vegetable on this soil. Yellow squash is one of the main vegetable crops in Richmond County.

Subsoil:

25 to 33 inches—brownish yellow sandy loam that has strata of sandy clay loam

33 to 46 inches—reddish yellow sandy clay loam

46 to 55 inches—reddish yellow sandy loam

Underlying material:

55 to 65 inches—mottled strong brown, light red, and light gray sandy loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow in the lower part of the subsoil and in the underlying material

Available water capacity: Moderate

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Severe

Hazard of water erosion: Moderate

Slope class: Strongly sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The moderately well drained Pelion soils in low areas and near drainageways
- The somewhat excessively drained Wakulla and Candor soils in random areas throughout the landscape
- Soils that have a surface layer more than 40 inches thick and that are on the higher parts of the landscape and along the outer edge of the map unit delineations
- Soils that have a surface layer less than 20 inches thick and that are on the steeper parts of the landscape or occur in random areas
- Poorly drained soils along narrow drainageways

Similar inclusions:

- Soils that have a gravelly surface layer

Use and Management

Major Uses: Woodland, cropland, pasture and hayland, and urban development

Cropland

Suitability: Poorly suited

Management concerns: Droughtiness, erosion, leaching of nutrients, and excessive sandiness

Management measures and considerations:

- Because of the droughtiness, providing supplemental irrigation and selecting crops varieties adapted to droughty conditions are necessary for the economic production of crops.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Using fertilizer in split applications helps to minimize leaching.
- Lime and fertilizer should be applied according to recommendations based on soil tests.
- Using low-pressure ground equipment helps to minimize surface slippage resulting from excessive sandiness.

Pasture and hayland

Suitability for pasture: Moderately suited

Suitability for hayland: Well suited

Management concerns: Droughtiness, erosion, and leaching of nutrients

Management measures and considerations:

- Controlled grazing, sod management, and weed control help to maintain quality forage.

- Intensive grazing practices maximize forage utilization and improve forage quality.
- Using fertilizer in split applications and according to recommendations based on soil tests helps to minimize leaching of nutrients and maintain fertility.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderate

Management concerns: Equipment limitations and seedling survival

Management measures and considerations:

- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting.
- Tree varieties that are drought tolerant should be selected for planting.
- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability, slope, erosion, and droughtiness

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Because of the droughtiness, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.

Interpretive Groups

Land capability classification: VIs

Woodland ordination symbol: 4S, based on longleaf pine as the indicator species

AgC—Ailey gravelly loamy sand, 8 to 15 percent slopes

Setting

Landform: Uplands of the Sandhills and Coastal Plain

Landscape position: Side slopes

Shape of areas: Long and narrow or irregular
Size of areas: 10 to 300 acres

Composition

Ailey soil and similar inclusions: 85 percent
 Contrasting inclusions: 15 percent

Typical Profile

Surface layer:
 0 to 9 inches—brown gravelly loamy sand

Subsurface layer:
 9 to 22 inches—very pale brown gravelly loamy sand

Subsoil:
 22 to 38 inches—reddish yellow sandy loam
 38 to 47 inches—reddish yellow sandy clay loam that has yellow mottles

Underlying material:
 47 to 65 inches—red sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow in the lower part of the subsoil and in the underlying material
Available water capacity: Moderate
Depth to high water table: Greater than 6 feet
Flooding: None
Shrink-swell potential: Low
Hazard of soil blowing: Severe
Hazard of water erosion: Moderate
Slope class: Strongly sloping
Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The moderately well drained Pelion soils in low areas and near drainageways
- The somewhat excessively drained Wakulla and Candor soils in random areas throughout the landscape
- Soils that have a surface layer more than 40 inches thick and that occur in random areas throughout the map unit
- Soils that have a surface layer less than 20 inches thick and that are on the steeper parts of the landscape or occur in random areas
- Poorly drained soils along narrow drainageways

Similar inclusions:

- Ailey soils that have a nongravelly surface layer

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited

Management concerns: Gravelly surface layer, droughtiness, erosion, and leaching of nutrients

Management measures and considerations:

- This map unit is not recommended for cropland.
- The gravelly surface layer limits the use of farm implements.

Pasture and hayland

Suitability for pasture: Well suited

Suitability for hayland: Moderately suited

Management concerns: Leaching of nutrients, erosion, gravelly surface layer, and droughtiness

Management measures and considerations:

- Controlled grazing, sod management, and weed control help to maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Using fertilizer in split applications and according to recommendations based on soil tests helps to minimize leaching of nutrients and maintain fertility.
- The gravelly surface layer limits the use of farm implements.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderate

Management concerns: Equipment limitations and seedling survival

Management measures and considerations:

- Tree varieties that are drought tolerant should be selected for planting.
- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.
- The gravelly surface layer limits the use of some implements.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability, slope, droughtiness, gravelly surface layer, and erosion

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.

- Cutting and filling help to overcome the slope.
- Because of the droughtiness, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

Interpretive Groups

Land capability classification: VIs

Woodland ordination symbol: 4S, based on longleaf pine as the indicator species

AgD—Ailey gravelly loamy sand, 15 to 25 percent slopes

Setting

Landform: Uplands of the Sandhills and Coastal Plain

Landscape position: Side slopes

Shape of areas: Long and narrow or irregular

Size of areas: 10 acres to more than 500 acres

Composition

Ailey soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 9 inches—brown gravelly loamy sand

Subsurface layer:

9 to 22 inches—very pale brown gravelly loamy sand

Subsoil:

22 to 38 inches—reddish yellow sandy loam

38 to 47 inches—reddish yellow sandy clay loam that has yellow mottles

Underlying material:

47 to 65 inches—red sandy loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow in the lower part of the subsoil and in the underlying material

Available water capacity: Moderate

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Severe

Hazard of water erosion: Severe

Slope class: Moderately steep

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The somewhat excessively drained Wakulla and Candor soils in random areas throughout the landscape
- Soils that have a surface layer more than 40 inches thick and that occur in random areas throughout the landscape
- Soils that have a surface layer less than 20 inches thick and that are on the steeper parts of the landscape
- Poorly drained soils along narrow drainageways

Similar inclusions:

- Ailey soils that have a nongravelly surface layer

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited

Management concerns: Gravelly surface layer, droughtiness, erosion, slope, and leaching of nutrients

Management measures and considerations:

- This map unit is not recommended for cropland.
- The gravelly surface layer limits the use of farm implements.

Pasture and hayland

Suitability for pasture: Moderately suited

Suitability for hayland: Poorly suited

Management concerns: Slope, gravelly surface layer, erosion, leaching of nutrients, and droughtiness

Management measures and considerations:

- Equipment should be operated with caution because of the slope.
- Controlled grazing, sod management, and weed control help to maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Using fertilizer in split applications and according to recommendations based on soil tests helps to minimize leaching of nutrients and maintain fertility.
- The gravelly surface layer limits the use of farm implements.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderate

Management concerns: Equipment limitations, erosion, and seedling survival

Management measures and considerations:

- Establishing filter strips of natural vegetation helps to

minimize siltation and maintain water temperature along intermittent and perennial streams.

- The ground surface in filter strips should be disturbed as little as possible.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Tree varieties that are drought tolerant should be selected for planting.
- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited

Management concerns: Restricted permeability, slope, droughtiness, gravelly surface layer, and erosion

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Because of the droughtiness, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: VIIe

Woodland ordination symbol: 4S, based on longleaf pine as the indicator species

AuB—Ailey-Urban land complex, 0 to 8 percent slopes

Setting

Landform: Uplands of the Sandhills and Coastal Plain

Landscape position: Broad ridges

Shape of areas: Irregular

Size of areas: 10 to 700 acres

Composition

Ailey soil and similar inclusions: 45 percent

Urban land: 40 percent

Contrasting inclusions: 15 percent

Typical Profile

Ailey

Surface layer:

0 to 6 inches—brown loamy sand

Subsurface layer:

6 to 25 inches—very pale brown loamy sand

Subsoil:

25 to 33 inches—brownish yellow sandy loam that has strata of sandy clay loam

33 to 46 inches—reddish yellow sandy clay loam

46 to 55 inches—reddish yellow sandy loam

Underlying material:

55 to 65 inches—mottled strong brown, light red, and light gray sandy loam

Urban land

Urban land consists of areas where 40 percent of the surface is covered by concrete, asphalt, buildings, or other impervious materials.

Soil Properties and Qualities

Ailey

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow in the lower part of the subsoil and in the underlying material

Available water capacity: Moderate

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Severe

Hazard of water erosion: Slight

Slope class: Nearly level or gently sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The moderately well drained Pelion soils in low areas and near drainageways
- The somewhat excessively drained Wakulla and Candor soils that commonly are on the broader and more level parts of the landscape but can occur in random areas throughout the landscape
- Soils that have a surface layer more than 40 inches thick and that commonly are in the more level areas but can occur in random areas throughout the landscape
- Somewhat poorly drained soils in low areas and near drainageways
- Poorly drained soils along narrow drainageways

Similar inclusions:

- Ailey soils that have a high water table at depths between 40 and 60 inches

Use and Management

Major Uses: Parking lots, shopping centers, industries, houses, and recreational areas

Cropland*Suitability:*

- This unit is not used for cropland.

Pasture and hayland*Suitability:*

- This unit is not used for pasture and hayland.

Woodland*Suitability:*

- This unit is not used for woodland.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability and droughtiness

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Because of the droughtiness, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.

Interpretive Groups

Land capability classification: Ailey—III_s; Urban land—VIII_s

Woodland ordination symbol: None assigned

AuC—Ailey-Urban land complex, 8 to 15 percent slopes**Setting**

Landform: Uplands of the Sandhills and Coastal Plain

Landscape position: Side slopes

Shape of areas: Irregular

Size of areas: 10 to 300 acres

Composition

Ailey soil and similar inclusions: 45 percent

Urban land: 40 percent

Contrasting inclusions: 15 percent

Typical Profile**Ailey***Surface layer:*

0 to 6 inches—brown loamy sand

Subsurface layer:

6 to 25 inches—very pale brown loamy sand

Subsoil:

25 to 33 inches—brownish yellow sandy loam that has strata of sandy clay loam

33 to 46 inches—reddish yellow sandy clay loam

46 to 55 inches—reddish yellow sandy loam

Underlying material:

55 to 65 inches—mottled strong brown, light red, and light gray sandy loam

Urban land

Urban land consists of areas where 40 percent of the surface is covered by concrete, asphalt, buildings, or other impervious materials.

Soil Properties and Qualities**Ailey**

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow in the lower part of the subsoil and in the underlying material

Available water capacity: Moderate

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Severe

Hazard of water erosion: Moderate

Slope class: Strongly sloping

Depth to bedrock: Greater than 60 inches

Inclusions*Contrasting inclusions:*

- The moderately well drained Pelion soils in low areas and near drainageways
- The somewhat excessively drained Wakulla and Candor soils that are in the more level areas and occur in random areas throughout the landscape
- Soils that have a surface layer more than 40 inches thick and that are commonly on the more level parts of the landscape but may occur in random areas
- Poorly drained soils along narrow drainageways

Similar inclusions:

- Ailey soils that have a high water table at depths between 40 and 60 inches

Use and Management

Major Uses: Parking lots, shopping centers, industries, houses, and recreational areas

Cropland

Suitability:

- This unit is not used for cropland.

Pasture and hayland

Suitability:

- This unit is not used for pasture and hayland.

Woodland

Suitability:

- This unit is not used for woodland.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability, slope, erosion, and droughtiness

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Because of the droughtiness, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.
- Catch basins and silt fences help to keep sediments on the construction site.

Interpretive Groups

Land capability classification: Ailey—VIs; Urban land—VIIIIs

Woodland ordination symbol: None assigned

BcB—Badin channery silt loam, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands

Landscape position: Lower ridges

Shape of areas: Irregular

Size of areas: 10 to 50 acres

Composition

Badin soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 5 inches—yellowish brown channery silt loam

Subsoil:

5 to 10 inches—yellowish red silty clay loam that has brown mottles

10 to 31 inches—red silty clay that has red mottles

Bedrock:

31 to 60 inches—mottled brownish yellow and red soft, weathered slate bedrock

Soil Properties and Qualities

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: Low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Moderate

Slope class: Gently sloping

Type of bedrock: Carolina Slate

Depth to bedrock: 20 to 40 inches to soft, weathered bedrock; greater than 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- The well drained to excessively drained Goldston soils that have a loamy subsoil, have soft bedrock at depths between 10 and 20 inches, and are on shoulders and the steeper side slopes
- Uwharrie soils that have a clayey subsoil, have bedrock at a depth of more than 60 inches, and are on the broader parts of the landscape
- Soils that have soft, weathered bedrock at depths between 40 and 60 inches and are on the broader parts of the landscape
- The eroded Badin soils that have a surface layer of channery silty clay loam and are on the steeper parts of the landscape

Use and Management

Major Uses: Woodland, cropland, and pasture

Cropland

Suitability: Moderately suited

Management concerns: Erosion and droughtiness

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions,

grassed waterways, and field borders help to control erosion.

- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions are necessary for the economic production of crops.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.

Pasture and hayland

Suitability: Well suited

Management concerns: Droughtiness, erosion, and compaction

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Windthrow hazard

Management measures and considerations:

- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.

Urban development

Suitability: Poorly suited

Management concerns: Depth to bedrock, shrink-swell potential, and restricted permeability

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Special equipment for earth moving, rock drilling, or blasting may be needed where depth to bedrock is a limitation.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: IIIe

Woodland ordination symbol: 8D, based on loblolly pine as the indicator species

BgC—Badin-Goldston complex, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands

Landscape position: Badin—broader parts of narrow ridges; Goldston—steeper parts of narrow ridges

Shape of areas: Irregular

Size of areas: 20 to 500 acres

Composition

Badin soil and similar inclusions: 50 percent

Goldston soil and similar inclusions: 35 percent

Contrasting inclusions: 15 percent

Typical Profile

Badin

Surface layer:

0 to 5 inches—yellowish brown channery silt loam

Subsoil:

5 to 10 inches—yellowish red silty clay loam that has brown mottles

10 to 31 inches—red silty clay that has red mottles

Bedrock:

31 to 60 inches—mottled brownish yellow and red soft, weathered slate bedrock

Goldston

Surface layer:

0 to 3 inches—yellowish brown very channery silt loam

Subsoil:

3 to 15 inches—yellowish brown very channery silt loam

Bedrock:

15 to 25 inches—weak red soft, weathered slate bedrock

25 inches—hard, unweathered slate bedrock

Soil Properties and Qualities

Depth class: Badin—moderately deep; Goldston—shallow

Drainage class: Badin—well drained; Goldston—well drained to excessively drained

Permeability: Badin—moderate; Goldston—moderately rapid

Available water capacity: Badin—low; Goldston—very low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Badin—moderate; Goldston—low

Hazard of water erosion: Severe

Slope class: Strongly sloping

Type of bedrock: Carolina Slate

Depth to bedrock: Badin—20 to 40 inches to soft, weathered bedrock and greater than 40 inches to hard, unweathered bedrock; Goldston—10 to 20 inches to soft, weathered bedrock and 20 to 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- Uwharrie soils that have a clayey subsoil, have bedrock at a depth of more than 60 inches, and are on the broader and less steep parts of the landscape
- Clayey soils that have soft, weathered bedrock at depths between 40 and 60 inches and that are on the broader and less steep parts of the landscape
- Loamy soils that have soft, weathered bedrock at depths between 20 to 60 inches and that are on the steeper parts of the landscape
- The eroded Badin soils that have a surface layer of channery silty clay loam and that are on the steeper parts of the landscape

Use and Management

Major Uses: Woodland, cropland, and pasture

Cropland

Suitability: Poorly suited

Management concerns: Badin—erosion and droughtiness; Goldston—erosion, gravelly surface layer, and droughtiness

Management measures and considerations:

- The gravelly surface layer limits the use of some implements.
- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions are necessary for the economic production of crops.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.

Pasture and hayland

Suitability for pasture: Well suited

Suitability for hayland: Moderately suited

Management concerns: Badin—droughtiness, erosion, and compaction; Goldston—droughtiness and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Windthrow hazard and seedling survival

Management measures and considerations:

- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.
- Planting seedlings during wet and cool periods helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited

Management concerns: Badin—depth to bedrock, shrink-swell potential, restricted permeability, slope, and erosion; Goldston—depth to bedrock, droughtiness, slope, and erosion

Management measures and considerations:

- A site on a more suitable soil should be considered.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.
- Because of the droughtiness, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.

Interpretive Groups

Land capability classification: Badin—IVe; Goldston—IVs
Woodland ordination symbol: Based on loblolly pine as the indicator species, 8D in areas of the Badin soil and 7D in areas of the Goldston soil

CaC—Candor and Wakulla soils, 8 to 15 percent slopes

Setting

Landform: Uplands of the Sandhills
Landscape position: Side slopes
Shape of areas: Broad and irregular
Size of areas: 30 to 800 acres

Composition

Candor soil and similar inclusions: 10 to 80 percent
 Wakulla soil and similar inclusions: 10 to 60 percent
 Contrasting inclusions: 10 percent

Typical Profile

Candor

Surface layer:
 0 to 3 inches—grayish brown sand

Subsurface layer:
 3 to 23 inches—light yellowish brown sand

Subsoil:
 23 to 35 inches—yellowish brown loamy sand
 35 to 54 inches—yellowish brown sand
 54 to 62 inches—brownish yellow sand
 62 to 68 inches—strong brown sandy loam that has yellow and red mottles
 68 to 80 inches—yellowish red sandy clay loam that has yellow mottles

Wakulla

Surface layer:
 0 to 3 inches—brown sand

Subsurface layer:
 3 to 26 inches—brownish yellow sand

Subsoil:
 26 to 39 inches—yellowish brown loamy sand

Underlying material:
 39 to 53 inches—brownish yellow sand
 53 to 70 inches—yellow sand that has brown mottles
 70 to 85 inches—very pale brown sand that has brown mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Candor—rapid to moderate; Wakulla—rapid
Available water capacity: Low
Depth to high water table: Greater than 6 feet
Flooding: None
Shrink-swell potential: Low
Hazard of soil blowing: Severe
Hazard of water erosion: Moderate
Slope class: Strongly sloping
Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The well drained Ailey soils that have a loamy subsoil and are on the more sloping parts of the landscape
- Soils that have a surface layer more than 40 inches thick and occur in random areas throughout the landscape
- Poorly drained soils along narrow drainageways

Similar inclusions:

- Soils that are sand throughout
- Soils that have two separate loamy subsoils

Use and Management

Major Uses: Woodland, cropland, pasture and hayland, and urban development

Cropland

Suitability: Poorly suited
Management concerns: Droughtiness, erosion, leaching of nutrients, and excessive sandiness
Management measures and considerations:

- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions are necessary for the economic production of crops.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Using fertilizer in split applications helps to minimize leaching.
- Lime and fertilizer should be applied according to recommendations based on soil tests.
- Using low-pressure ground equipment helps to minimize surface slippage resulting from excessive sandiness.

Pasture and hayland

Suitability for pasture: Well suited

Suitability for hayland: Moderately suited

Management concerns: Droughtiness, erosion, and leaching of nutrients

Management measures and considerations:

- Controlled grazing, sod management, and weed control help to maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Using fertilizer in split applications and according to recommendations based on soil tests helps to minimize leaching of nutrients and maintain fertility.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderate

Management concerns: Equipment limitations and seedling survival

Management measures and considerations:

- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting.
- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.
- Establishing filter strips of natural vegetation helps to minimize siltation and maintain water temperature along intermittent and perennial streams.
- The ground surface in filter strips should be disturbed as little as possible.
- Tree varieties that are drought tolerant should be selected for planting.

Urban development

Suitability: Moderately suited

Management concerns: Rapid permeability, slope, droughtiness, and erosion

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- Cutting and filling help to overcome the slope.
- Because of the droughtiness, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.

Interpretive Groups

Land capability classification: IVs

Woodland ordination symbol: Based on longleaf pine as the indicator species, 4S in areas of the Candor soil and 5S in areas of the Wakulla soil

ChA—Chewacla loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: River or stream valleys of the Piedmont, Coastal Plain, and Sandhills

Landscape position: Flood plains

Shape of areas: Long and irregular in width

Size of areas: 10 to more than 500 acres

Composition

Chewacla soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 8 inches—yellowish brown loam

Subsoil:

8 to 20 inches—brown loam that has yellow mottles

20 to 34 inches—mottled yellowish brown, dark brown, and light gray loam

34 to 43 inches—mottled strong brown, very pale brown, and light gray clay loam

43 to 66 inches—light brownish gray clay loam that has brown mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Moderate

Available water capacity: High

High water table: 0.5 foot to 1.5 feet below the soil surface; apparent

Flooding: Frequent

Shrink-swell potential: Low

Hazard of water erosion: Slight

Slope class: Nearly level

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The moderately well drained Peawick soils that have a clayey subsoil and are on small elevated stream terraces
- The well drained Riverview soils in the slightly higher landscape positions

- Poorly drained, clayey soils in depressional areas
- Poorly drained soils adjacent to uplands or in random areas throughout the landscape
- Clayey soils adjacent to uplands or in random areas throughout the landscape

Use and Management

Major Uses: Cropland, pasture, and woodland

Cropland

Suitability: Generally poorly suited; well suited in areas that are drained and protected from flooding

Management concerns: Wetness and flooding

Management measures and considerations:

- An artificial or surface drainage system, or both, may be needed if moisture-sensitive crops are grown.
- Tillage should be restricted to dry periods.
- Flood-control measures are needed to minimize damage to crops.
- Harvesting crops as soon as possible helps to overcome the wetness limitation.
- Maintaining unobstructed drainageways helps to accelerate the removal of excess water.

Pasture and hayland

Suitability: Well suited

Management concerns: Wetness and flooding

Management measures and considerations:

- Flooding may be a hazard to livestock.
- Installing and maintaining a drainage system help to control the water table.
- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Equipment limitations, seedling survival, and windthrow hazard

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Artificial drainageways should be maintained, and wetness-tolerant trees should be selected for planting.
- Establishing filter strips of natural vegetation helps to minimize siltation and maintain water temperature along intermittent and perennial streams.
- The ground surface in filter strips should be disturbed as little as possible.

- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Planting seedlings on bedded ridges helps to reduce seedling mortality rates.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Poorly suited

Management concerns: Flooding and wetness

Management measures and considerations:

- This map unit is not recommended for urban development. A site on a more suitable soil should be considered.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- The County Building Inspector should be contacted prior to constructing buildings in areas that are subject to flooding; a permit may be required.
- Flood-control structures may be needed.

Interpretive Groups

Land capability classification: IVw

Woodland ordination symbol: 7W, based on yellow-poplar as the indicator species

CrB—Creedmoor fine sandy loam, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands

Landscape position: Broad upland flats

Shape of areas: Irregular

Size of areas: 10 to 200 acres

Composition

Creedmoor soil and similar inclusions: 90 percent

Contrasting inclusions: 10 percent

Typical Profile

Surface layer:

0 to 3 inches—brown fine sandy loam

Subsurface layer:

3 to 11 inches—light brownish yellow fine sandy loam

Subsoil:

11 to 16 inches—brownish yellow loam

- 16 to 22 inches—yellowish brown clay loam that has brown, red, and gray mottles
- 22 to 43 inches—mottled yellowish brown, dark red, yellowish red, and light gray clay loam
- 43 to 54 inches—mottled yellowish brown, light gray, and dark red clay loam

Underlying material:

54 to 62 inches—dark reddish brown silt loam saprolite that has gray mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained or somewhat poorly drained

Permeability: Very slow

Available water capacity: High

High water table: 1.5 to 2.0 feet below the soil surface; perched

Flooding: None

Shrink-swell potential: High

Hazard of water erosion: Moderate

Slope class: Gently sloping

Type of bedrock: Triassic siltstone and mudstone

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The well drained Mayodan soils in the slightly higher landscape positions
- Well drained soils that have soft, weathered bedrock at depths between 40 and 60 inches and that occur in random areas throughout the landscape
- Soils that have a very high shrink-swell potential and occur in random areas throughout the landscape
- The eroded Creedmoor soils that have a surface layer of silty clay loam and are on the steeper parts of the landscape

Similar inclusions:

- Peawick soils that formed in old alluvium

Use and Management

Major Uses: Woodland, cropland, and pasture and hayland

Cropland

Suitability: Well suited

Management concerns: Erosion and wetness

Management measures and considerations:

- An artificial or surface drainage system, or both, may be needed if moisture-sensitive crops are grown.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

- Harvesting crops as soon as possible helps to overcome the wetness limitation.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: High

Management concerns:

- This map unit has few limitations affecting woodland management.

Management measures and considerations:

- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Poorly suited

Management concerns: Restricted permeability, wetness, and shrink-swell potential

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- Reinforcing foundations and footings helps to reduce the shrink-swell potential.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: IIe

Woodland ordination symbol: 9A, based on loblolly pine as the indicator species

CzD—Cullen-Wynott complex, 15 to 35 percent slopes

Setting

Landform: Piedmont uplands

Landscape position: Cullen—narrow ridges and upper side slopes; Wynott—commonly on lower side slopes but occurring in areas throughout the landscape

Shape of areas: Irregular

Size of areas: 20 to 500 acres

Composition

Cullen soil and similar inclusions: 60 percent

Wynott soil and similar inclusions: 25 percent

Contrasting inclusions: 15 percent

Typical Profile

Cullen

Surface layer:

0 to 3 inches—brown fine sandy loam

Subsoil:

3 to 32 inches—red clay

32 to 42 inches—red clay loam

Underlying material:

42 to 50 inches—red loam saprolite

50 to 60 inches—reddish yellow loam saprolite

Wynott

Surface layer:

0 to 2 inches—brown fine sandy loam

Subsurface layer:

2 to 5 inches—light yellowish brown fine sandy loam

Subsoil:

5 to 10 inches—dark brown loam

10 to 22 inches—brown clay

Underlying material:

22 to 27 inches—mottled reddish brown, reddish yellow, and light gray loam saprolite

Bedrock:

27 to 60 inches—multicolored soft, weathered mafic bedrock

Soil Properties and Qualities

Depth class: Cullen—very deep; Wynott—moderately deep

Drainage class: Well drained

Permeability: Cullen—moderate; Wynott—slow

Available water capacity: Cullen—high; Wynott—low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Cullen—moderate; Wynott—high

Hazard of water erosion: Very severe

Slope class: Moderately steep or steep

Type of bedrock: Cullen—felsic and mafic; Wynott—mafic

Depth to bedrock: Cullen—greater than 60 inches;

Wynott—20 to 40 inches to soft, weathered bedrock and greater than 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- Enon soils that extend below a depth of 60 inches, have a high shrink-swell potential, and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have higher amounts of rock fragments throughout than the Cullen and Wynott soils, have soft, weathered bedrock at depths between 20 and 40 inches, and are on the lower side slopes
- Soils that have soft, weathered bedrock at depths between 10 and 20 inches and that are intermingled with the Cullen and Wynott soils in some areas
- Soils that have a high amount of rock fragments throughout and occur in random areas on some landscapes

Similar inclusions:

- Davidson soils that have a dark red subsoil and are on the upper and lower side slopes
- Soils that have a gravelly surface layer and occur in random areas throughout the landscape

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited

Management concerns: Cullen—slope and erosion;

Wynott—slope, erosion, and droughtiness

Management measures and considerations:

- This map unit is not recommended for cropland.

Pasture and hayland

Suitability for pasture: Moderately suited

Suitability for hayland: Poorly suited

Management concerns: Cullen—compaction, erosion, and slope; Wynott—compaction, erosion, droughtiness, and slope

Management measures and considerations:

- Equipment should be operated with caution because of the slope.
- Controlled grazing, limited grazing during wet periods,

the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.

- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Cullen—equipment limitations and erosion; Wynott—equipment limitations, erosion, and windthrow hazard

Management measures and considerations:

- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
- Skid trails should not run upslope from landings because of the hazard of erosion.
- Higher standard roads are needed due to the high content of clay.
- Establishing filter strips of natural vegetation helps to minimize siltation and maintain water temperature along intermittent and perennial streams.
- The ground surface in filter strips should be disturbed as little as possible.
- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.

Urban development

Suitability: Poorly suited

Management concerns: Cullen—slope, erosion, shrink-swell potential, and restricted permeability; Wynott—slope, erosion, restricted permeability, shrink-swell potential, and depth to bedrock

Management measures and considerations:

- This map unit is not recommended for urban development.
- A site on a more suitable soil should be considered.
- The less sloping areas should be selected as

construction sites or structures should be designed so that they conform with the natural slope.

- Cutting and filling help to overcome the slope.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

Interpretive Groups

Land capability classification: Cullen—Vle; Wynott—VIIe

Woodland ordination symbol: Based on loblolly pine as the indicator species, 8C in areas of the Cullen soil and 7R in areas of the Wynott soil

DaB2—Davidson clay loam, 2 to 8 percent slopes, eroded

Setting

Landform: River or stream valleys and Piedmont uplands

Landscape position: Ridges on high stream terraces

Shape of areas: Irregular

Size of areas: 5 to 20 acres

Composition

Davidson soil and similar inclusions: 95 percent

Contrasting inclusions: 5 percent

Typical Profile

Surface layer:

0 to 7 inches—dark reddish brown clay loam

Subsoil:

7 to 75 inches—dark red clay

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of water erosion: Severe

Slope class: Gently sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Soils that have a gravelly surface layer and are near the ends of ridges

Similar inclusions:

- Slightly eroded soils that have a surface layer of loam and are in areas intermingled with the Davidson soil throughout the landscape
- Soils that do not have dark red color throughout the subsoil

Use and Management

Major Uses: Woodland, cropland, and pasture

Cropland

Suitability: Moderately suited

Management concerns: Erosion and tilth

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: High

Management concerns: Equipment limitations and seedling survival

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.

- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.
- Higher standard roads are needed due to the high content of clay.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability, high clay content, and slope

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

Interpretive Groups

Land capability classification: IIIe

Woodland ordination symbol: 9C, based on loblolly pine as the indicator species

DaC2—Davidson clay loam, 8 to 15 percent slopes, eroded

Setting

Landform: River or stream valleys and Piedmont uplands

Landscape position: Narrow ridges and side slopes on high stream terraces

Shape of areas: Irregular

Size of areas: 5 to 30 acres

Composition

Davidson soil and similar inclusions: 95 percent

Contrasting inclusions: 5 percent

Typical Profile

Surface layer:

0 to 7 inches—dark reddish brown clay loam

Subsoil:

7 to 75 inches—dark red clay

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of water erosion: Very severe

Slope class: Strongly sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Cullen soils that have a moderate shrink-swell potential, have a subsoil that is lighter colored than that of the Davidson soil, and are on the steeper parts of the landscape
- Wynott soils that have soft bedrock at depths between 20 and 40 inches and are on the steeper parts of the landscape
- Soils that have a gravelly surface layer and are near the ends of ridges
- Soils that have soft, weathered bedrock at depths between 40 and 60 inches and are on the steeper parts of the landscape

Similar inclusions:

- Slightly eroded soils that have a surface layer of loam and that are intermingled in areas with the Davidson soil throughout the landscape
- Soils that do not have dark red color throughout the subsoil

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Poorly suited

Management concerns: Erosion and tilth

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland

Suitability for pasture: Well suited

Suitability for hayland: Moderately suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.

- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: High

Management concerns: Equipment limitations and seedling survival

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.
- Higher standard roads are needed due to the high content of clay.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability, high clay content, and slope

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.

Interpretive Groups

Land capability classification: IVe

Woodland ordination symbol: 9C, based on loblolly pine as the indicator species

EmD—Enon-Mayodan complex, 15 to 35 percent slopes, very stony

Setting

Landform: Piedmont uplands

Landscape position: Enon—upper and middle side slopes and ridge noses; Mayodan—middle and lower side slopes and slight depressional areas

Shape of areas: Elongated or irregular

Size of areas: 20 to 100 acres

Composition

Enon soil and similar inclusions: 55 percent

Mayodan soil and similar inclusions: 30 percent
 Contrasting inclusions: 15 percent

Typical Profile

Enon

Surface layer:

0 to 6 inches—very dark grayish brown gravelly loam

Subsoil:

6 to 27 inches—dark yellowish brown clay

27 to 39 inches—yellowish brown clay loam that has brown, gray, and yellow mottles

Underlying material:

39 to 60 inches—brownish yellow loam saprolite that has brown and yellow mottles

Mayodan

Surface layer:

0 to 3 inches—yellowish red sandy loam

Subsurface layer:

3 to 9 inches—yellowish red sandy loam

Subsoil:

9 to 24 inches—red clay

24 to 28 inches—red clay loam that has red mottles

28 to 38 inches—mottled red and yellowish red clay loam

Underlying material:

38 to 50 inches—mottled red, yellowish red, strong brown, and reddish yellow loam saprolite that has pockets of clay loam

50 to 62 inches—mottled strong brown and yellow sandy loam saprolite

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Enon—slow; Mayodan—moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Enon—very high; Mayodan—moderate

Hazard of water erosion: Very severe

Rock fragments on the surface: About 1.0 percent surface stones and boulders averaging about 15 inches in diameter and about 20 feet apart

Slope class: Moderately steep or steep

Type of bedrock: Enon—mafic; Mayodan—Triassic siltstone and mudstone

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Wynott soils that have soft, weathered bedrock at

depths between 20 and 40 inches and occur in random areas throughout the landscape

- Soils that have hard, unweathered bedrock at depths between 20 and 40 inches and occur in random areas throughout the landscape

- Soils that have bedrock at depths between 40 and 60 inches and are on the upper and middle side slopes

- Loamy soils on the lower side slopes

- Nonstony soils on the middle and lower side slopes

Similar inclusions:

- Dark red soils on the lower side slopes

Use and Management

Major Uses: Woodland

Cropland

Suitability: Unsited

Management concerns: Stony surface, erosion, and slope

Management measures and considerations:

- This map unit is not recommended for cropland.
- The excessive amount of stones on the surface limits the use of tillage equipment and implements.

Pasture and hayland

Suitability for pasture: Moderately suited

Suitability for hayland: Poorly suited

Management concerns: Slope, erosion, compaction, and stony surface

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Surface stones may limit the use of equipment and be hazardous.
- Equipment should be operated with caution because of the slope and stony surface.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Erosion, equipment limitations, and seedling survival

Management measures and considerations:

- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.
- Constructing roads, fire lanes, and skid trails on the

contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.

- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
- Skid trails should not run upslope from landings because of the hazard of erosion.
- Higher standard roads are needed due to the high content of clay.
- Planting seedlings during wet and cool periods helps to reduce seedling mortality rates.
- Stones and boulders on the surface may hinder logging and planting operations.

Urban development

Suitability: Poorly suited

Management concerns: Stony surface, restricted permeability, shrink-swell potential, erosion, and slope

Management measures and considerations:

- This map unit is not recommended for urban development.
- Special equipment may be needed to remove excess stones and boulders.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: VIIs

Woodland ordination symbol: Based on loblolly pine as the indicator species, 7R in areas of the Enon soil and 9R in areas of the Mayodan soil

EzB—Enon-Wynott complex, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands

Landscape position: Ridges

Shape of areas: Elongated or irregular

Size of areas: 5 to 20 acres

Composition

Enon soil and similar inclusions: 70 percent

Wynott soil and similar inclusions: 15 percent

Contrasting inclusions: 15 percent

Typical Profile

Enon

Surface layer:

0 to 7 inches—dark brown loam

Subsoil:

7 to 33 inches—olive brown clay

33 to 38 inches—mottled brownish yellow and grayish brown sandy clay loam

Underlying material:

38 to 60 inches—olive yellow sandy loam saprolite that has brown mottles

Wynott

Surface layer:

0 to 2 inches—brown fine sandy loam

Subsurface layer:

2 to 5 inches—light yellowish brown fine sandy loam

Subsoil:

5 to 10 inches—dark brown loam

10 to 22 inches—brown clay

Underlying material:

22 to 27 inches—mottled reddish brown, reddish yellow, and light gray loam saprolite

Bedrock:

27 to 60 inches—multicolored soft, weathered mafic bedrock

Soil Properties and Qualities

Depth class: Enon—very deep; Wynott—moderately deep

Drainage class: Well drained

Permeability: Slow

Available water capacity: Enon—high; Wynott—low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Enon—very high; Wynott—high

Hazard of water erosion: Moderate

Slope class: Gently sloping

Type of bedrock: Mafic rock

Depth to bedrock: Enon—greater than 60 inches;

Wynott—20 to 40 inches to soft, weathered bedrock and greater than 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- Mayodan soils and dark red soils that have moderate

permeability, have bedrock at a depth of more than 60 inches, and are along the outer edge of the map unit delineations

- Soils that have hard, unweathered bedrock at depths between 20 and 40 inches and occur in random areas throughout the landscape
- Soils that have bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- Moderately well drained and somewhat poorly drained soils that have bedrock at a depth of more than 60 inches and are in depressions or near drainageways
- Eroded soils that have a surface layer of clay loam and occur in random areas throughout the landscape

Use and Management

Major Uses: Woodland, pasture, and cropland

Cropland

Suitability: Moderately suited

Management concerns: Enon—erosion; Wynott—erosion and droughtiness

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions may be necessary for the economic production of crops.

Pasture and hayland

Suitability: Well suited

Management concerns: Enon—compaction and erosion; Wynott—compaction, droughtiness, and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns: Enon—equipment limitations;

Wynott—windthrow hazard and equipment limitations

Management measures and considerations:

- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Logging during periods when the soils are not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Poorly suited

Management concerns: Enon—restricted permeability and shrink-swell potential; Wynott—restricted permeability, depth to bedrock, and shrink-swell potential

Management measures and considerations:

- This map unit is not recommended for urban development.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: IIIe

Woodland ordination symbol: Based on loblolly pine as the indicator species, 7A in areas of the Enon soil and 7D in areas of the Wynott soil

EzC—Enon-Wynott complex, 4 to 15 percent slopes, very bouldery

Setting

Landform: Piedmont uplands

Landscape position: Enon—broader parts of ridges and side slopes; Wynott—steeper parts of ridges and side slopes

Shape of areas: Elongated or irregular

Size of areas: 20 to 80 acres

Composition

Enon soil and similar inclusions: 75 percent
 Wynott soil and similar inclusions: 15 percent
 Contrasting inclusions: 10 percent

Typical Profile

Enon

Surface layer:

0 to 6 inches—very dark grayish brown gravelly loam

Subsoil:

6 to 27 inches—dark yellowish brown clay
 27 to 39 inches—yellowish brown clay loam that has brown, gray, and yellow mottles

Underlying material:

39 to 60 inches—brownish yellow loam saprolite that has brown and yellow mottles

Wynott

Surface layer:

0 to 2 inches—brown fine sandy loam

Subsurface layer:

2 to 5 inches—light yellowish brown fine sandy loam

Subsoil:

5 to 10 inches—dark brown loam
 10 to 22 inches—brown clay

Underlying material:

22 to 27 inches—mottled reddish brown, reddish yellow, and light gray loam saprolite

Bedrock:

27 to 60 inches—multicolored soft, weathered mafic bedrock

Soil Properties and Qualities

Depth class: Enon—very deep; Wynott—moderately deep

Drainage class: Well drained

Permeability: Slow

Available water capacity: Enon—high; Wynott—low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Enon—very high; Wynott—high

Hazard of water erosion: Severe

Rock fragments on the surface: About 2.0 percent boulders and stones averaging about 36 inches in diameter and about 20 feet apart

Slope class: Gently sloping or strongly sloping

Type of bedrock: Mafic rock

Depth to bedrock: Enon—greater than 60 inches; Wynott—20 to 40 inches to soft, weathered bedrock and greater than 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- Mayodan soils and dark red soils that have moderate permeability, have bedrock at a depth of more than 60 inches, and are along the outer edge of the map unit delineations
- Soils that have hard, unweathered bedrock at depths between 20 and 40 inches and occur in random areas throughout the landscape
- Soils that have bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- Nonbouldery soils in random areas throughout the landscape

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited

Management concerns: Enon—stony and bouldery surface and erosion; Wynott—stony and bouldery surface, droughtiness, and erosion

Management measures and considerations:

- This map unit is not recommended for cropland.
- The excessive amount of stones on the surface limits the use of tillage equipment and implements.

Pasture and hayland

Suitability for pasture: Moderately suited

Suitability for hayland: Poorly suited

Management concerns: Enon—stony surface, erosion, and compaction; Wynott—stony surface, erosion, droughtiness, and compaction

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Surface stones may limit the use of equipment and be hazardous.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Enon—equipment limitations and seedling survival; Wynott—equipment limitations, windthrow hazard, and seedling survival

Management measures and considerations:

- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.
- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Planting seedlings during wet and cool periods helps to reduce seedling mortality rates.
- Stones and boulders on the surface may hinder logging and planting operations.

Urban development*Suitability:* Poorly suited

Management concerns: Enon—stony surface, restricted permeability, shrink-swell potential, erosion, and slope; Wynott—stony surface, restricted permeability, shrink-swell potential, depth to bedrock, erosion, and slope

Management measures and considerations:

- This map unit is not recommended for urban development.
- Special equipment may be needed to remove excess stones and boulders.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- A site on a more suitable soil should be considered.

Interpretive Groups*Land capability classification:* VIs

Woodland ordination symbol: 7X, based on loblolly pine as the indicator species

FaB2—Faceville sandy clay loam, 2 to 6 percent slopes, eroded**Setting***Landform:* Uplands of the Coastal Plain*Landscape position:* Broad ridges*Shape of areas:* Irregular*Size of areas:* 10 to 20 acres**Composition**

Faceville soil and similar inclusions: 90 percent

Contrasting inclusions: 10 percent

Typical Profile*Surface layer:*

0 to 6 inches—yellowish red sandy clay loam

Subsoil:

6 to 30 inches—red clay

30 to 52 inches—red clay that has yellow mottles

52 to 63 inches—red clay that has reddish yellow mottles

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Well drained*Permeability:* Moderate*Available water capacity:* High*Depth to high water table:* Greater than 6 feet*Flooding:* None*Shrink-swell potential:* Low*Hazard of water erosion:* Severe*Slope class:* Gently sloping*Depth to bedrock:* Greater than 60 inches**Inclusions***Contrasting inclusions:*

- Norfolk soils that have a loamy subsoil that is yellower than that of the Faceville soil and are on the lower parts of the landscape in areas adjacent to drainageways
- Orangeburg soils that have a loamy subsoil and occur in areas throughout the landscape

Similar inclusions:

- The slightly eroded Faceville soils that have a surface layer of sandy loam and occur in random areas throughout the landscape

Use and Management**Major Uses:** Cropland, woodland, and pasture**Cropland***Suitability:* Moderately suited*Management concerns:* Erosion and tillth*Management measures and considerations:*

- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and

conservation tillage help to control erosion and conserve moisture.

- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns:

- This map unit has few limitations affecting woodland management.

Management measures and considerations:

- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.
- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.

Interpretive Groups

Land capability classification: IIIe

Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

GdD—Goldston-Badin complex, 15 to 55 percent slopes

Setting

Landform: Piedmont uplands

Landscape position: Goldston—steeper side slopes;

Badin—less steep side slopes

Shape of areas: Irregular

Size of areas: 25 to 500 acres

Composition

Goldston soil and similar inclusions: 50 percent

Badin soil and similar inclusions: 35 percent

Contrasting inclusions: 15 percent

Typical Profile

Goldston

Surface layer:

0 to 3 inches—yellowish brown very channery silt loam

Subsoil:

3 to 15 inches—yellowish brown very channery silt loam

Bedrock:

15 to 25 inches—weak red soft, weathered slate bedrock

25 inches—hard, unweathered slate bedrock

Badin

Surface layer:

0 to 5 inches—yellowish brown channery silt loam

Subsoil:

5 to 10 inches—yellowish red silty clay loam that has brown mottles

10 to 31 inches—red silty clay that has red mottles

Bedrock:

31 to 60 inches—mottled brownish yellow and red soft, weathered slate bedrock

Soil Properties and Qualities

Depth class: Goldston—shallow; Badin—moderately deep

Drainage class: Goldston—well drained to excessively drained; Badin—well drained

Permeability: Goldston—moderately rapid; Badin—moderate

Available water capacity: Goldston—very low; Badin—low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Goldston—low; Badin—moderate

Hazard of water erosion: Very severe

Slope class: Moderately steep or steep

Type of bedrock: Carolina Slate

Depth to bedrock: Goldston—10 to 20 inches to soft, weathered bedrock and 20 to 40 inches to hard, unweathered bedrock; Badin—20 to 40 inches to soft, weathered bedrock and greater than 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- The well drained Uwharrie soils that have bedrock at a depth of more than 60 inches and are in the less sloping areas
- Well drained, loamy soils that have soft, weathered bedrock at depths between 20 and 40 inches and occur in random areas throughout the landscape
- Well drained soils that have soft, weathered bedrock at depths between 40 and 60 inches and are on the broader and less steep parts of the landscape
- Well drained, loamy soils that have bedrock at a depth of more than 60 inches and are in areas around the head of drainageways

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited

Management concerns: Goldston—droughtiness, slope, gravelly surface layer, and erosion; Badin—droughtiness, slope, and erosion

Management measures and considerations:

- This map unit is not recommended for cropland.

Pasture and hayland

Suitability for pasture: Poorly suited

Suitability for hayland: Unsited

Management concerns: Goldston—droughtiness, slope, and erosion; Badin—droughtiness, slope, erosion, and compaction

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Equipment should be operated with caution because of the slope.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Goldston—windthrow hazard, equipment limitations, seedling survival, and erosion; Badin—windthrow hazard, equipment limitations, and erosion

Management measures and considerations:

- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.
- Planting seedlings during wet and cool periods helps to reduce seedling mortality rates.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.
- Establishing filter strips of natural vegetation helps to minimize siltation and maintain water temperature along intermittent and perennial streams.
- The ground surface in filter strips should be disturbed as little as possible.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
- Skid trails should not run upslope from landings because of the hazard of erosion.

Urban development

Suitability: Poorly suited

Management concerns: Goldston—slope, depth to bedrock, erosion, and droughtiness; Badin—slope, depth to bedrock, erosion, restricted permeability, and shrink-swell potential

Management measures and considerations:

- This map unit is not recommended for urban development.
- A site on a more suitable soil should be considered.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Because of the droughtiness and clayey surface textures, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.
- Reinforcing foundations and footings and removing soil

and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.

- Land shaping may be needed to remove excess surface water or direct it away from structures.

Interpretive Groups

Land capability classification: Goldston—VIIIs; Badin—VIIe

Woodland ordination symbol: Based on loblolly pine as the indicator species, 7D in areas of the Goldston soil and 8R in areas of the Badin soil

HsA—Hornsboro silt loam, 0 to 2 percent slopes

Setting

Landform: River or stream terraces

Landscape position: Broad stream terraces

Shape of areas: Irregular

Size of areas: 20 to 500 acres

Composition

Hornsboro soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 5 inches—grayish brown silt loam

Subsoil:

5 to 19 inches—light brownish gray silty clay loam that has yellow mottles

19 to 30 inches—yellowish brown silty clay that has gray mottles

30 to 55 inches—yellowish brown clay that has gray, red, and brown mottles

55 to 69 inches—dark yellowish brown clay loam that has pockets of clay and gray mottles

Underlying material:

69 to 80 inches—mottled pale brown and light gray clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Slow

Available water capacity: High

High water table: 1.0 to 1.5 feet below the soil surface; apparent

Flooding: None

Shrink-swell potential: High

Hazard of water erosion: Slight

Slope class: Nearly level

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The moderately well drained Peawick soils and the moderately well drained to somewhat poorly drained Creedmoor soils on the higher parts of the landscape
- Poorly drained soils along the edge of flood plains and in depressions
- Moderately well drained, loamy soils on the slightly higher landscapes

Similar inclusions:

- Soils that have a subsoil that is more acid than that of the Hornsboro soil

Use and Management

Major Uses: Woodland, pasture, and cropland

Cropland

Suitability: Poorly suited

Management concerns: Wetness

Management measures and considerations:

- An artificial or surface drainage system, or both, may be needed if moisture-sensitive crops are grown.
- Maintaining unobstructed drainageways helps to accelerate the removal of excess water.
- Harvesting crops as soon as possible helps to overcome the wetness limitation.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland

Suitability: Well suited

Management concerns: Wetness and compaction

Management measures and considerations:

- Installing and maintaining a drainage system help to control the water table.
- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: High

Management concerns: Equipment limitations, seedling survival, and windthrow hazard

Management measures and considerations:

- Logging during periods when the soil is not wet and

using low-pressure ground equipment help to minimize rutting and compaction.

- Planting seedlings on bedded ridges helps to reduce seedling mortality rates.
- Artificial drainageways should be maintained, and wetness-tolerant trees should be selected for planting.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.

Urban development

Suitability: Poorly suited

Management concerns: Wetness, restricted permeability, and shrink-swell potential

Management measures and considerations:

- A site on a more suitable soil should be considered.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.

Interpretive Groups

Land capability classification: IVw

Woodland ordination symbol: 9W, based on loblolly pine as the indicator species

JmA—Johnston mucky loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: River or stream valleys of the Sandhills and Coastal Plain

Landscape position: Flood plains

Shape of areas: Long and narrow

Size of areas: 20 to more than 1,000 acres

Composition

Johnston soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 25 inches—black mucky loam

25 to 34 inches—very dark grayish brown fine sandy loam

Underlying material:

34 to 45 inches—grayish brown sandy loam that has brown mottles

45 to 62 inches—light gray loamy sand

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Very poorly drained

Permeability: Moderately rapid

Available water capacity: Moderate

High water table: 1.0 foot above the soil surface to 1.5 feet below; apparent

Flooding: Frequent

Shrink-swell potential: Low

Hazard of water erosion: Slight

Slope class: Nearly level

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Paxville soils that have a dark surface layer less than 24 inches thick and are on the slightly higher parts of the landscape that are not subject to flooding
- Moderately well drained, somewhat poorly drained, and poorly drained, loamy soils on small elevated stream terraces that are not subject to flooding
- Soils that have a thick, organic surface layer and occur in random areas throughout the landscape

Similar inclusions:

- Soils that have a 10- to 24-inch-thick dark surface layer and occur in random areas throughout the map unit
- Soils that have a nonmucky surface layer and occur in random areas throughout the map unit

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsuitable

Management concerns: Flooding and wetness

Management measures and considerations:

- This map unit is not recommended for cropland.

Pasture and hayland

Suitability: Poorly suited

Management concerns: Wetness and flooding

Management measures and considerations:

- This map unit is not recommended for pasture and hayland.
- Flooding may be a hazard to livestock.
- Maintaining existing drainage systems helps to control the water table.

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Lime and fertilizer should be applied according to recommendations based on soil tests.

Woodland

Suitability: Poorly suited

Productivity class: Moderately high

Management concerns: Equipment limitations, windthrow hazard, and seedling survival

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Planting seedlings on bedded ridges helps to reduce seedling mortality rates.
- Artificial drainageways should be maintained, and wetness-tolerant trees should be selected for planting.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Thinning the stand lightly and at frequent intervals helps to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees.

Urban development

Suitability: Unsuitable

Management concerns: Wetness and flooding

Management measures and considerations:

- This map unit is not recommended for urban development.
- A site on a more suitable soil should be considered.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- The County Building Inspector should be contacted prior to constructing buildings in areas that are subject to flooding; a permit may be required.

Interpretive Groups

Land capability classification: VIIw

Woodland ordination symbol: 7W, based on yellow-poplar as the indicator species

MaC—Masada sandy loam, 8 to 15 percent slopes

Setting

Landform: River or stream valleys and uplands of the Piedmont and Coastal Plain

Landscape position: Narrow ridges and side slopes on high stream terraces

Shape of areas: Irregular

Size of areas: 10 to 500 acres

Composition

Masada soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 6 inches—strong brown sandy loam

Subsoil:

6 to 16 inches—red sandy clay

16 to 47 inches—red clay that has yellow and brown mottles

47 to 57 inches—mottled red, brownish yellow, and yellow sandy clay loam

Underlying material:

57 to 70 inches—mottled red, brownish yellow, and pale brown sandy clay loam that has pockets of sandy clay

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: Moderate

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of soil blowing: Moderate

Hazard of water erosion: Severe

Slope class: Strongly sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Ailey soils that have a 20- to 40-inch-thick sandy surface layer over the subsoil and are on narrow ridges
- Soils that have a loamy subsoil and occur in random areas throughout the map unit
- Soils that have soft, weathered bedrock at depths between 40 and 60 inches and are on the lower side slopes
- The eroded Masada soils that have a surface layer of

sandy clay loam and that occur in random areas throughout the map unit

Similar inclusions:

- Pacolet soils that have a surface layer of gravelly sandy loam
- Turbeville soils that have a subsoil at a depth of more than 60 inches
- Uwharrie soils that have a surface layer of clay loam
- Mayodan soils that have a surface layer of sandy clay loam

Use and Management

Major Uses: Woodland, pasture and hayland, cropland, and urban development

Cropland

Suitability: Moderate

Management concerns: Erosion

Management measures and considerations:

- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability for pasture: Well suited

Suitability for hayland: Moderately suited

Management concerns: Erosion and compaction

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns:

- This map unit has few limitations affecting woodland management.

Management measures and considerations:

- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Higher standard roads are needed due to the high content of clay.

Urban development

Suitability: Moderately suited

Management concerns: Slope, erosion, restricted permeability, and shrink-swell potential

Management measures and considerations:

- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- Land shaping may be needed to remove excess surface water or direct it away from structures.

Interpretive Groups

Land capability classification: IIIe

Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

MaD—Masada sandy loam, 15 to 25 percent slopes

Setting

Landform: River or stream valleys and uplands of the Piedmont and Coastal Plain

Landscape position: Side slopes on high stream terraces

Shape of areas: Irregular

Size of areas: 10 to 300 acres

Composition

Masada soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 6 inches—strong brown sandy loam

Subsoil:

6 to 16 inches—red sandy clay

16 to 47 inches—red clay that has yellow and brown mottles

47 to 57 inches—mottled red, brownish yellow, and yellow sandy clay loam

Underlying material:

57 to 70 inches—mottled red, brownish yellow, and pale brown sandy clay loam that has pockets of sandy clay

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: Moderate

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of soil blowing: Moderate

Hazard of water erosion: Very severe

Slope class: Moderately steep

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Soils that have a loamy subsoil and occur in random areas throughout the map unit
- Badin soils that have soft bedrock at depths between 20 and 40 inches and are on the lower side slopes and near the end of ridges
- Soils that have soft, weathered bedrock at depths between 40 and 60 inches and are on the lower side slopes
- The eroded Masada soils that have a surface layer of sandy clay loam and occur in random areas throughout the map unit

Similar inclusions:

- Pacolet soils that have a surface layer of gravelly sandy loam
- Uwharrie soils that have a surface layer of clay loam
- Mayodan soils that have a surface layer of sandy clay loam

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Poorly suited

Management concerns: Slope and erosion

Management measures and considerations:

- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.

- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability for pasture: Moderately suited

Suitability for hayland: Poorly suited

Management concerns: Slope, erosion, and compaction

Management measures and considerations:

- Equipment should be operated with caution because of the slope.
- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Erosion and equipment limitations

Management measures and considerations:

- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
- Skid trails should not run upslope from landings because of the hazard of erosion.
- Higher standard roads are needed due to the content of clay.
- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.

Urban development

Suitability: Poorly suited

Management concerns: Slope, erosion, restricted permeability, and shrink-swell potential

Management measures and considerations:

- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Vegetating all cleared and graded areas as soon as

possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: IVe

Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

MbB2—Mayodan sandy clay loam, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands

Landscape position: Broad ridges

Shape of areas: Irregular

Size of areas: 10 to 200 acres

Composition

Mayodan soil and similar inclusions: 90 percent

Contrasting inclusions: 10 percent

Typical Profile

Surface layer:

0 to 5 inches—strong brown sandy clay loam

Subsoil:

5 to 8 inches—yellowish red sandy clay loam

8 to 34 inches—red clay that has red mottles

34 to 43 inches—red silty clay that has red mottles

43 to 48 inches—red silty clay loam that has red mottles

Underlying material:

48 to 62 inches—dark red silt loam saprolite that has pockets of silty clay loam and red and gray mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Severe

Slope class: Gently sloping

Type of bedrock: Triassic siltstone and mudstone

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Enon and Wynott soils that have slow permeability and are on the slightly elevated parts of the landscape
- Pinkston soils that have a loamy subsoil, have hard bedrock at depths between 20 and 40 inches, and occur in areas throughout the landscape
- The moderately well drained and somewhat poorly drained Creedmoor soils near drainageways
- Exway soils that have soft bedrock at depths between 20 and 40 inches and are adjacent to streams and flood plains
- Dark red soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape

Similar inclusions:

- Soils that have a dark red subsoil
- The slightly eroded Mayodan soils that have a surface layer of fine sandy loam

Use and Management

Major Uses: Woodland, cropland, and pasture and hayland

Cropland

Suitability: Moderately suited

Management concerns: Erosion and tilth

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Equipment limitations, seedling survival, and erosion

Management measures and considerations:

- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.
- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.

Urban development

Suitability: Moderately suited

Management concerns: Shrink-swell potential, restricted permeability, and erosion

Management measures and considerations:

- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Because of the restricted permeability, land shaping may be needed to remove surface water in the less sloping areas.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

Interpretive Groups

Land capability classification: IIIe

Woodland ordination symbol: 8C, based on loblolly pine as the indicator species

MbC2—Mayodan sandy clay loam, 8 to 15 percent slopes, eroded

Setting

Landform: Piedmont uplands

Landscape position: Narrow ridges and side slopes

Shape of areas: Irregular

Size of areas: 10 to 300 acres

Composition

Mayodan soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 5 inches—strong brown sandy clay loam

Subsoil:

5 to 8 inches—yellowish red sandy clay loam

8 to 34 inches—red clay that has red mottles

34 to 43 inches—red silty clay that has red mottles

43 to 48 inches—red silty clay loam that has red mottles

Underlying material:

48 to 62 inches—dark red silt loam saprolite that has pockets of silty clay loam and red and gray mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Very severe

Slope class: Strongly sloping

Type of bedrock: Triassic siltstone and mudstone

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Enon and Wynott soils that have slow permeability and occur in random areas throughout the landscape
- Pinkston soils that have a loamy subsoil, have hard bedrock at depths between 20 and 40 inches, and occur in areas throughout the landscape
- Exway soils that have soft bedrock at depths between 20 and 40 inches and are adjacent to streams and flood plains
- Dark red soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape

Similar inclusions:

- Soils that have a dark red subsoil
- The slightly eroded Mayodan soils that have a surface layer of fine sandy loam

Use and Management

Major Uses: Woodland, cropland, and pasture and hayland

Cropland

Suitability: Poorly suited

Management concerns: Erosion and tilth

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland

Suitability for pasture: Well suited

Suitability for hayland: Moderately suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Equipment limitations, seedling survival, and erosion

Management measures and considerations:

- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.
- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.

Urban development

Suitability: Moderately suited

Management concerns: Shrink-swell potential, restricted permeability, slope, and erosion

Management measures and considerations:

- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Because of the restricted permeability, land shaping may be needed to remove surface water in the less sloping areas.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

Interpretive Groups

Land capability classification: IVe

Woodland ordination symbol: 8C, based on loblolly pine as the indicator species

MbD—Mayodan sandy loam, 15 to 25 percent slopes

Setting

Landform: Piedmont uplands

Landscape position: Side slopes

Shape of areas: Irregular

Size of areas: 30 to 1,000 acres

Composition

Mayodan soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 3 inches—yellowish red sandy loam

Subsurface layer:

3 to 9 inches—yellowish red sandy loam

Subsoil:

9 to 24 inches—red clay

24 to 28 inches—red clay loam that has red mottles

28 to 38 inches—mottled red and yellowish red clay loam

Underlying material:

38 to 50 inches—mottled red, yellowish red, strong brown,

and reddish yellow loam saprolite that has pockets of clay loam
50 to 62 inches—mottled strong brown and yellow sandy loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Depth to high water table: Greater than 6 feet
Flooding: None
Shrink-swell potential: Moderate
Hazard of water erosion: Very severe
Slope class: Moderately steep
Type of bedrock: Triassic siltstone and mudstone
Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Enon and Wynott soils that have slow permeability and occur in random areas throughout the landscape
- Pinkston soils that have a loamy subsoil, have hard bedrock at depths between 20 and 40 inches, and occur in areas throughout the landscape
- Exway soils that have soft bedrock at depths between 20 and 40 inches and are adjacent to streams and flood plains
- Dark red soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- The eroded Mayodan soils that have a surface layer of sandy clay loam

Similar inclusions:

- Soils that have a dark red subsoil

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited
Management concerns: Erosion and slope
Management measures and considerations:
• This unit is not recommended for cropland.

Pasture and hayland

Suitability for pasture: Moderately suited
Suitability for hayland: Poorly suited
Management concerns: Slope, compaction, and erosion
Management measures and considerations:
• Equipment should be operated with caution because of the slope.

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited
Productivity class: High
Management concerns: Erosion and equipment limitations
Management measures and considerations:
• Higher standard roads are needed due to the high content of clay.
• Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
• Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
• Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
• Skid trails should not run upslope from landings because of the hazard of erosion.
• Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
• Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.

Urban development

Suitability: Poorly suited
Management concerns: Shrink-swell potential, restricted permeability, slope, and erosion
Management measures and considerations:
• Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
• The County Health Department should be contacted for guidance in developing sanitary facilities.
• Because of the restricted permeability, land shaping may be needed to remove surface water in the less sloping areas.
• The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
• Cutting and filling help to overcome the slope.
• Vegetating all cleared and graded areas as soon as

possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: Vle

Woodland ordination symbol: 9R, based on loblolly pine as the indicator species

MdD—Mayodan sandy loam, 15 to 25 percent slopes, stony

Setting

Landform: Piedmont uplands

Landscape position: Side slopes

Shape of areas: Irregular

Size of areas: 15 to 300 acres

Composition

Mayodan soil and similar inclusions: 90 percent

Contrasting inclusions: 10 percent

Typical Profile

Surface layer:

0 to 3 inches—yellowish red sandy loam

Subsurface layer:

3 to 9 inches—yellowish red sandy loam

Subsoil:

9 to 24 inches—red clay

24 to 28 inches—red clay loam that has red mottles

28 to 38 inches—mottled red and yellowish red clay loam

Underlying material:

38 to 50 inches—mottled red, yellowish red, strong brown, and reddish yellow loam saprolite that has pockets of clay loam

50 to 62 inches—mottled strong brown and yellow sandy loam saprolite

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Very severe

Rock fragments on the surface: About 0.1 percent stones and boulders averaging about 14 inches in diameter and about 50 feet apart

Slope class: Moderately steep

Type of bedrock: Triassic siltstone and mudstone

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Enon and Wynott soils that have slow permeability and occur in random areas throughout the landscape
- Pinkston soils that have a loamy subsoil, have hard bedrock at depths between 20 and 40 inches, and occur in areas throughout the landscape
- Exway soils that have soft bedrock at depths between 20 and 40 inches and are adjacent to streams and flood plains
- Dark red soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- The eroded Mayodan soils that have a surface layer of sandy clay loam

Similar inclusions:

- Soils that have a dark red subsoil

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited

Management concerns: Erosion, slope, and stony surface

Management measures and considerations:

- This map unit is not recommended for cropland.

Pasture and hayland

Suitability for pasture: Moderately suited

Suitability for hayland: Poorly suited

Management concerns: Slope, stony surface, compaction, and erosion

Management measures and considerations:

- Equipment should be operated with caution because of the slope.
- Surface stones may limit the use of equipment and be hazardous.
- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Erosion and equipment limitations

Management measures and considerations:

- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Skid trails should not run upslope from landings because of the hazard of erosion.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.
- Stones and boulders on the surface may hinder logging and planting operations.

Urban development

Suitability: Poorly suited

Management concerns: Shrink-swell potential, restricted permeability, stony surface, slope, and erosion

Management measures and considerations:

- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Special equipment may be needed to remove excess stones and boulders.
- Because of the restricted permeability, land shaping may be needed to remove surface water in the less sloping areas.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: VIs

Woodland ordination symbol: 9R, based on loblolly pine as the indicator species

MeB2—Mayodan-Exway complex, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands

Landscape position: Low, broad ridges

Shape of areas: Irregular

Size of areas: 20 to 400 acres

Composition

Mayodan soil and similar inclusions: 50 percent

Exway soil and similar inclusions: 35 percent

Contrasting inclusions: 15 percent

Typical Profile

Mayodan

Surface layer:

0 to 5 inches—strong brown sandy clay loam

Subsoil:

5 to 8 inches—yellowish red sandy clay loam

8 to 34 inches—red clay that has red mottles

34 to 43 inches—red silty clay that has red mottles

43 to 48 inches—red silty clay loam that has red mottles

Underlying material:

48 to 62 inches—dark red silt loam saprolite that has pockets of silty clay loam and red and gray mottles

Exway

Surface layer:

0 to 4 inches—dark reddish brown clay loam

Subsoil:

4 to 12 inches—dark red silty clay that has red mottles

12 to 19 inches—dark reddish brown silty clay that has red and yellow mottles

19 to 24 inches—dark reddish brown silty clay loam that has red, yellow, and gray mottles

Bedrock:

24 to 40 inches—multicolored soft, weathered, interbedded siltstone and mudstone bedrock

Soil Properties and Qualities

Depth class: Mayodan—very deep; Exway—moderately deep

Drainage class: Well drained

Permeability: Mayodan—moderate; Exway—moderately slow

Available water capacity: Mayodan—high; Exway—low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Severe

Slope class: Gently sloping

Type of bedrock: Triassic siltstone and mudstone

Depth to bedrock: Mayodan—greater than 60 inches;

Exway—20 to 40 inches to soft, weathered bedrock and greater than 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- Enon and Wynott soils that have slow permeability and are on the slightly elevated parts of the landscape
- Pinkston soils that have a loamy subsoil, have hard bedrock at depths between 20 and 40 inches, and occur in areas throughout the landscape
- The moderately well drained and somewhat poorly drained Creedmoor soils near drainageways
- Soils that have soft, weathered bedrock at depths between 10 and 20 inches and occur in random areas throughout the landscape
- Dark red soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape

Similar inclusions:

- The slightly eroded Mayodan and Exway soils that have a surface layer of fine sandy loam

Use and Management

Major Uses: Woodland, pasture and hayland, and cropland

Cropland

Suitability: Moderately suited

Management concerns: Mayodan—erosion and tilth;

Exway—erosion, droughtiness, and tilth

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.
- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions may be necessary for the economic production of crops.

Pasture and hayland

Suitability: Well suited

Management concerns: Mayodan—compaction and

erosion; Exway—compaction, droughtiness, and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Mayodan—equipment limitations, seedling survival, and erosion; Exway—equipment limitations, windthrow hazard, seedling survival, and erosion

Management measures and considerations:

- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.
- Logging during periods when the soils are not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.
- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.

Urban development

Suitability: Mayodan—moderately suited; Exway—poorly suited

Management concerns: Mayodan—restricted permeability, erosion, and shrink-swell potential; Exway—depth to bedrock, shrink-swell potential, erosion, and restricted permeability

Management measures and considerations:

- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Because of the restricted permeability, land shaping may be needed to remove surface water in the less sloping areas.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: IIIe

Woodland ordination symbol: Based on loblolly pine as the indicator species, 8C in areas of the Mayodan soil and 7D in areas of the Exway soil

MeC2—Mayodan-Exway complex, 8 to 15 percent slopes, eroded

Setting

Landform: Piedmont uplands

Landscape position: Narrow ridges and side slopes

Shape of areas: Irregular

Size of areas: 5 to 200 acres

Composition

Mayodan soil and similar inclusions: 50 percent

Exway soil and similar inclusions: 35 percent

Contrasting inclusions: 15 percent

Typical Profile

Mayodan

Surface layer:

0 to 5 inches—strong brown sandy clay loam

Subsoil:

5 to 8 inches—yellowish red sandy clay loam

8 to 34 inches—red clay that has red mottles

34 to 43 inches—red silty clay that has red mottles

43 to 48 inches—red silty clay loam that has red mottles

Underlying material:

48 to 62 inches—dark red silt loam saprolite that has pockets of silty clay loam and red and gray mottles

Exway

Surface layer:

0 to 4 inches—dark reddish brown clay loam

Subsoil:

4 to 12 inches—dark red silty clay that has red mottles

12 to 19 inches—dark reddish brown silty clay that has red and yellow mottles

19 to 24 inches—dark reddish brown silty clay loam that has red, yellow, and gray mottles

Bedrock:

24 to 40 inches—multicolored soft, weathered, interbedded siltstone and mudstone bedrock

Soil Properties and Qualities

Depth class: Mayodan—very deep; Exway—moderately deep

Drainage class: Well drained

Permeability: Mayodan—moderate; Exway—moderately slow

Available water capacity: Mayodan—high; Exway—low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Very severe

Slope class: Strongly sloping

Type of bedrock: Triassic siltstone and mudstone

Depth to bedrock: Mayodan—greater than 60 inches; Exway—20 to 40 inches to soft, weathered bedrock and greater than 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- Pinkston soils that have a loamy subsoil, have hard bedrock at depths between 20 and 40 inches, and occur in areas throughout the landscape
- The moderately well drained and somewhat poorly drained Creedmoor soils near drainageways
- Soils that have soft, weathered bedrock at depths between 10 and 20 inches and occur in random areas throughout the landscape
- Dark red soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- Loamy soils on the lower side slopes

Similar inclusions:

- The slightly eroded Mayodan and Exway soils that have a surface layer of fine sandy loam

Use and Management

Major Uses: Woodland, pasture and hayland, and cropland

Cropland

Suitability: Poorly suited

Management concerns: Mayodan—erosion and tilth; Exway—erosion, droughtiness, and tilth

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions may be necessary for the economic production of crops.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland*Suitability for pasture:* Well suited*Suitability for hayland:* Moderately suited*Management concerns:* Mayodan—compaction and erosion; Exway—compaction, droughtiness, and erosion*Management measures and considerations:*

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland*Suitability:* Moderately suited*Productivity class:* Moderately high*Management concerns:* Mayodan—equipment limitations, seedling survival, and erosion; Exway—equipment limitations, windthrow hazard, seedling survival, and erosion*Management measures and considerations:*

- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.
- Logging during periods when the soils are not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Planting seedlings during wet and cool periods and

minimizing site preparation help to reduce seedling mortality rates.

- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.

Urban development*Suitability:* Mayodan—moderately suited; Exway—poorly suited*Management concerns:* Mayodan—slope, erosion, restricted permeability, and shrink-swell potential; Exway—slope, erosion, depth to bedrock, shrink-swell potential, and restricted permeability*Management measures and considerations:*

- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Because of the restricted permeability, land shaping may be needed to remove surface water in the less sloping areas.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- A site on a more suitable soil should be considered.

Interpretive Groups*Land capability classification:* IVe*Woodland ordination symbol:* Based on loblolly pine as the indicator species, 8C in areas of the Mayodan soil and 7D in areas of the Exway soil**MnB—McQueen loam, 1 to 6 percent slopes****Setting***Landform:* River or stream valleys*Landscape position:* Broad stream terraces*Shape of areas:* Irregular*Size of areas:* 10 to 150 acres

Composition

McQueen soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

Surface layer:

0 to 5 inches—brown loam

Subsoil:

5 to 9 inches—yellowish red clay loam

9 to 21 inches—yellowish red clay that has red and brown mottles

21 to 28 inches—yellowish red silty clay that has brown and yellow mottles

28 to 55 inches—red clay that has yellow mottles

55 to 62 inches—red clay loam that has yellow mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow

Available water capacity: High

High water table: 5 to 6 feet below the soil surface;
apparent

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Moderate

Slope class: Gently sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The moderately well drained Peawick soils on the lower parts of the landscape
- Soils that have a loamy subsoil and are in the more sloping areas and in depositional areas
- Eroded soils that have a surface layer of sandy clay loam and occur in random areas throughout the landscape

Similar inclusions:

- Turbeville soils that have a clayey subsoil that is thicker than that of the McQueen soil

Use and Management

Major Uses: Cropland, pasture and hayland, and woodland

Cropland

Suitability: Well suited

Management concerns: Erosion

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions,

grassed waterways, and field borders help to control erosion.

- Winter cover crops, crop residue management, no-till planting (fig. 3), and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns:

- This map unit has few limitations affecting woodland management.

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Moderately suited

Management concerns: Shrink-swell potential, wetness, and restricted permeability

Management measures and considerations:

- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Building structures on the highest part of the landscape helps to minimize wetness problems caused by the restricted permeability.
- Because of the restricted permeability, an artificial drainage system may be needed to remove surface water.

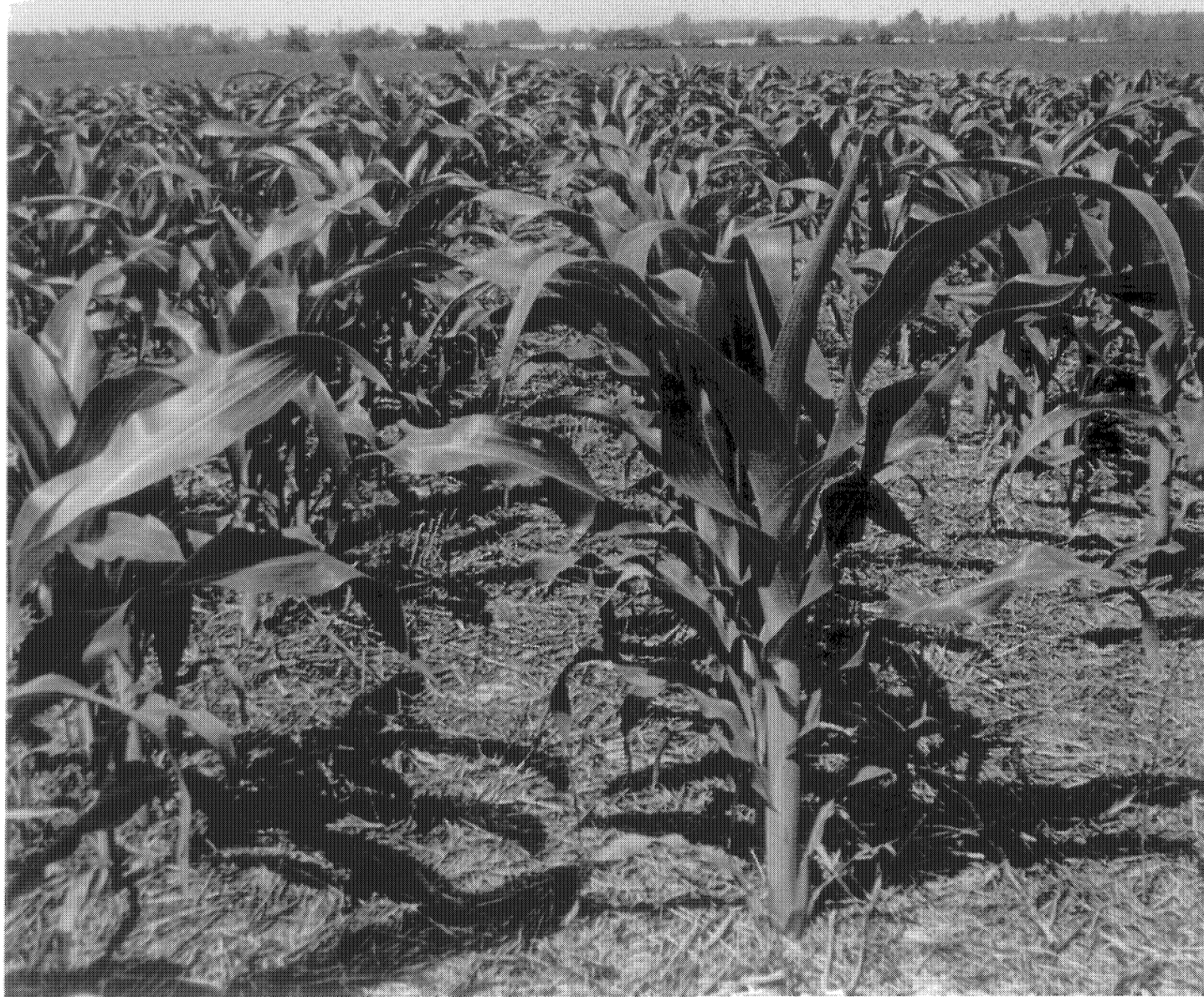


Figure 3.—No-till corn on McQueen loam, 1 to 6 percent slopes. No-till planting is an effective way to control erosion and conserve soil moisture.

- Land shaping can help to divert surface water and runoff away from structures.

Interpretive Groups

Land capability classification: IIe

Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

NoA—Norfolk loamy sand, 0 to 2 percent slopes

Setting

Landform: Uplands of the Coastal Plain and Sandhills

Landscape position: Broad ridges

Shape of areas: Irregular

Size of areas: 10 to 100 acres

Composition

Norfolk soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 8 inches—brown loamy sand

Subsurface layer:

8 to 13 inches—light yellowish brown loamy sand

Subsoil:

13 to 16 inches—brownish yellow sandy loam

16 to 31 inches—yellowish brown sandy clay loam

31 to 64 inches—strong brown sandy clay loam that has red and brown mottles

64 to 68 inches—mottled yellowish brown, strong brown, very pale brown, and red sandy clay loam

68 to 75 inches—mottled yellowish brown, strong brown, red, and light gray sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

High water table: 4 to 6 feet below the soil surface; apparent

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Moderate

Hazard of water erosion: Slight

Slope class: Nearly level

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The moderately well drained Pelion soils along the heads of drainageways
- Ailey soils that have a 20- to 40-inch-thick sandy surface layer and are on the higher parts of the landscape
- Somewhat poorly drained and poorly drained soils in depressional areas

Similar inclusions:

- Orangeburg soils that have a red subsoil

Use and Management

Major Uses: Cropland, pasture and hayland, woodland, and urban development

Cropland

Suitability: Well suited

Management concerns:

- This map unit has no major limitations affecting cropland management.

Management measures and considerations:

- Wind stripcropping (where blowing sand is a hazard) and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability: Well suited

Management concerns:

- This map unit has no major limitations affecting the management of pasture and hayland.

Management measures and considerations:

- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns:

- This map unit has few limitations affecting woodland management.

Management measures and considerations:

- Restricting the use of logging equipment to dry periods helps to minimize rutting and compaction.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Moderately suited

Management concerns: Wetness

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- An artificial drainage system may be needed to minimize wetness problems.
- Land shaping may be needed to remove excess surface water or direct it away from structures.

Interpretive Groups

Land capability classification: I

Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

NoB—Norfolk loamy sand, 2 to 6 percent slopes

Setting

Landform: Uplands of the Coastal Plain and Sandhills

Landscape position: Broad ridges

Shape of areas: Irregular

Size of areas: 20 to 700 acres

Composition

Norfolk soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 8 inches—brown loamy sand

Subsurface layer:

8 to 13 inches—light yellowish brown loamy sand

Subsoil:

13 to 16 inches—brownish yellow sandy loam

16 to 31 inches—yellowish brown sandy clay loam

31 to 64 inches—strong brown sandy clay loam that has red and brown mottles

64 to 68 inches—mottled yellowish brown, strong brown, very pale brown, and red sandy clay loam

68 to 75 inches—mottled yellowish brown, strong brown, red, and light gray sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

High water table: 4 to 6 feet below the soil surface; apparent

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Moderate

Hazard of water erosion: Moderate

Slope class: Gently sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Soils that have a brittle, slowly permeable subsoil and are near side slopes
- Soils that have a gravelly surface layer and are along the outer edge of the map unit delineations near drainageways
- Faceville soils that have a red clayey subsoil and occur in random areas throughout the landscape

- The moderately well drained Pelion soils along the heads of drainageways
 - Ailey soils that have a sandy surface layer 20 to 40 inches thick over the subsoil and are on the higher parts of the landscape in transitional areas between the Sandhills and the Coastal Plain
 - Somewhat poorly drained and poorly drained soils in depressional areas
- Similar inclusions:*
- Orangeburg soils that have a red subsoil

Use and Management

Major Uses: Cropland, woodland, pasture and hayland, and urban development

Cropland

Suitability: Well suited

Management concerns: Erosion

Management measures and considerations:

- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability: Well suited

Management concerns: Erosion

Management measures and considerations:

- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns:

- This map unit has few limitations affecting woodland management.
- Management measures and considerations:*
- Restricting the use of logging equipment to dry periods helps to minimize rutting and compaction.
 - Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Moderately suited

Management concerns: Wetness

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- An artificial drainage system may be needed to minimize wetness problems.
- Land shaping may be needed to remove excess surface water or direct it away from structures.

Interpretive Groups

Land capability classification: IIe

Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

OrA—Orangeburg loamy sand, 0 to 2 percent slopes

Setting

Landform: Uplands of the Coastal Plain and Sandhills

Landscape position: Broad ridges

Shape of areas: Irregular

Size of areas: 10 to 400 acres

Composition

Orangeburg soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 6 inches—brown loamy sand

Subsoil:

6 to 16 inches—yellowish red sandy loam

16 to 54 inches—red sandy clay loam

54 to 66 inches—red sandy clay loam that has brown mottles

66 to 80 inches—red sandy loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Moderate

Hazard of water erosion: Slight

Slope class: Nearly level

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Faceville soils that have a clayey subsoil and are along the outer edge of the map unit delineations

Similar inclusions:

- Soils that have a thick subsoil of sandy loam
- Norfolk soils that have a subsoil that is yellower than that of the Orangeburg soil

Use and Management

Major Uses: Cropland, pasture and hayland, woodland, and urban development

Cropland

Suitability: Well suited

Management concerns:

- This map unit has no major limitations affecting cropland management.

Management measures and considerations:

- Wind stripcropping (where blowing sand is a hazard) and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability: Well suited

Management concerns:

- This map unit has no major limitations affecting the management of pasture and hayland.

Management measures and considerations:

- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns:

- This map unit has few limitations affecting woodland management.

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Well suited

Management concerns:

- This map unit has few limitations affecting urban development.

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.

Interpretive Groups*Land capability classification:* I

Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

OrB—Orangeburg loamy sand, 2 to 6 percent slopes**Setting**

Landform: Uplands of the Coastal Plain and Sandhills

Landscape position: Broad ridges

Shape of areas: Irregular

Size of areas: 10 to 500 acres

Composition

Orangeburg soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile*Surface layer:*

0 to 6 inches—brown loamy sand

Subsoil:

6 to 16 inches—yellowish red sandy loam

16 to 54 inches—red sandy clay loam

54 to 66 inches—red sandy clay loam that has brown mottles

66 to 80 inches—red sandy loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Moderate

Hazard of water erosion: Moderate

Slope class: Gently sloping

Depth to bedrock: Greater than 60 inches

Inclusions*Contrasting inclusions:*

- Faceville soils that have a clayey subsoil and are along the outer edge of the map unit delineations

- Soils that have a gravelly surface layer and are along the outer edge of the map unit delineations near drainageways

Similar inclusions:

- Soils that have a thick subsoil of sandy loam
- Norfolk soils that have a subsoil that is yellower than that of the Orangeburg soil

Use and Management

Major Uses: Cropland, pasture and hayland, woodland, and urban development

Cropland

Suitability: Well suited

Management concerns: Erosion

Management measures and considerations:

- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability: Well suited

Management concerns: Erosion

Management measures and considerations:

- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns:

- This map unit has few limitations affecting woodland management.

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Well suited

Management concerns:

- This map unit has few limitations affecting urban development.

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.

Interpretive Groups

Land capability classification: IIe

Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

PaC—Pacolet gravelly sandy loam, 8 to 15 percent slopes**Setting**

Landform: Piedmont uplands

Landscape position: Narrow ridges and side slopes

Shape of areas: Irregular

Size of areas: 5 to 80 acres

Composition

Pacolet soil and similar inclusions: 90 percent

Contrasting inclusions: 10 percent

Typical Profile

Surface layer:

0 to 2 inches—brown gravelly sandy loam

Subsurface layer:

2 to 7 inches—brown gravelly sandy loam

Subsoil:

7 to 25 inches—red sandy clay

25 to 36 inches—red sandy clay loam

Underlying material:

36 to 60 inches—multicolored sandy clay loam saprolite

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of water erosion: Severe

Slope class: Strongly sloping

Type of bedrock: Felsic rock

Depth to bedrock: Greater than 60 inches

Inclusions*Contrasting inclusions:*

- Ailey soils that have a 20- to 40-inch-thick sandy surface layer and are on the higher parts of the landscape
- Wynott soils that have soft bedrock at depths between 20 and 40 inches and are on the lower side slopes
- Soils that have a loamy subsoil and occur in random areas throughout the landscape
- The eroded Pacolet soils that have a surface layer of gravelly sandy clay loam and occur in random areas throughout the landscape
- Cullen soils that have a nongravelly surface layer, have a moderate shrink-swell potential, and occur in random areas throughout the landscape

Similar inclusions:

- Soils that have a clayey subsoil that is thicker than that of the Pacolet soil
- Soils that have a dark red subsoil
- Soils that have a subsoil that is yellower than that of the Pacolet soil
- Pacolet soils that have a nongravelly surface layer

Use and Management

Major Uses: Woodland and pasture and hayland

Cropland

Suitability: Poorly suited

Management concerns: Erosion and gravelly surface layer

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- The gravelly surface layer limits the use of farm implements.

Pasture and hayland

Suitability for pasture: Well suited

Suitability for hayland: Moderately suited

Management concerns: Erosion, compaction, and gravelly surface layer

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and

hay fields helps to reduce the hazard of erosion and increase germination.

- The excessive gravel in the surface layer limits the use of tillage.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns:

- This map unit has few limitations affecting woodland management.

Management measures and considerations:

- Restricting the use of logging equipment to dry periods helps to minimize rutting and compaction.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Moderately suited

Management concerns: Slope, erosion, gravelly surface layer, and restricted permeability

Management measures and considerations:

- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- Because of the gravelly surface layer, irrigation and additions of topsoil or organic matter may be needed in establishing lawns.

Interpretive Groups

Land capability classification: IVe

Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

PaD—Pacolet gravelly sandy loam, 15 to 35 percent slopes

Setting

Landform: Piedmont uplands

Landscape position: Side slopes

Shape of areas: Irregular

Size of areas: 20 to 300 acres

Composition

Pacolet soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 2 inches—brown gravelly sandy loam

Subsurface layer:

2 to 7 inches—brown gravelly sandy loam

Subsoil:

7 to 25 inches—red sandy clay

25 to 36 inches—red sandy clay loam

Underlying material:

36 to 60 inches—multicolored sandy clay loam saprolite

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of water erosion: Very severe

Slope class: Moderately steep or steep

Type of bedrock: Felsic rock

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Wynott soils that have soft bedrock at depths between 20 and 40 inches and are on the lower side slopes
 - Soils that have a loamy subsoil and occur in random areas throughout the landscape
 - The eroded Pacolet soils that have a surface layer of gravelly sandy clay loam and occur in random areas throughout the landscape
 - Cullen soils that have a nongravelly surface layer, have a moderate shrink-swell potential, and occur in random areas throughout the landscape
- Similar inclusions:*
- Soils that have a clayey subsoil that is thicker than that of the Pacolet soil
 - Soils that have a dark red subsoil
 - Soils that have a subsoil that is yellower than that of the Pacolet soil
 - Pacolet soils that have a nongravelly surface layer

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsuitable

Management concerns: Erosion, gravelly surface layer, and slope

Management measures and considerations:

- This map unit is not recommended for cropland.

Pasture and hayland*Suitability for pasture:* Moderately suited*Suitability for hayland:* Poorly suited*Management concerns:* Slope, erosion, compaction, and gravelly surface layer*Management measures and considerations:*

- Equipment should be operated with caution because of the slope.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- The excessive gravel in the surface layer limits the use of tillage implements.

Woodland*Suitability:* Moderately suited*Productivity class:* Moderately high*Management concerns:* Erosion and equipment limitations*Management measures and considerations:*

- Skid trails should not run upslope from landings because of the hazard of erosion.
- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.

Urban development*Suitability:* Poorly suited*Management concerns:* Slope, erosion, gravelly surface layer, and restricted permeability*Management measures and considerations:*

- This map unit is not recommended for urban development.
- The less sloping areas should be selected as

construction sites or structures should be designed so that they conform with the natural slope.

- Cutting and filling help to overcome the slope.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- Because of the gravelly surface layer, irrigation and additions of topsoil or organic matter may be needed in establishing lawns.
- A site on a more suitable soil should be considered.

Interpretive Groups*Land capability classification:* VIIe*Woodland ordination symbol:* 8R, based on loblolly pine as the indicator species**PcA—Paxville fine sandy loam, 0 to 2 percent slopes****Setting***Landform:* Uplands of the Sandhills and Coastal Plain*Landscape position:* Low, broad upland flats and depressional areas*Shape of areas:* Irregular*Size of areas:* 5 to 100 acres**Composition**

Paxville soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile*Surface layer:*

0 to 12 inches—black fine sandy loam

Subsoil:

12 to 18 inches—gray sandy clay loam

18 to 35 inches—gray sandy clay loam that has yellow mottles

35 to 43 inches—light gray sandy clay loam that has yellow mottles

43 to 50 inches—light gray sandy loam that has yellow mottles

Underlying material:

50 to 60 inches—light gray sandy clay that has pockets of sandy clay loam and yellow mottles

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Very poorly drained*Permeability:* Moderate

Available water capacity: High
High water table: 1 foot above the soil surface to 1 foot below; apparent
Flooding: None
Shrink-swell potential: Low
Hazard of soil blowing: Moderate
Hazard of water erosion: Slight
Slope class: Nearly level
Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The very poorly drained Johnston soils on flood plains
- Somewhat poorly drained soils on the higher parts of the landscape
- Soils that have a thick, organic surface layer and are near flood plains
- Poorly drained soils that have a clayey subsoil and occur in random areas throughout the landscape

Similar inclusions:

- Poorly drained soils in random areas throughout the landscape
- Soils that have a subsoil that extends below a depth of 60 inches and is thicker than that of the Paxville soil

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited

Management concerns: Wetness and erosion

Management measures and considerations:

- This map unit is not recommended for cropland.
- An artificial or surface drainage system, or both, may be needed if moisture-sensitive crops are grown.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.
- Wind stripcropping (where blowing sand is a hazard) and field borders help to control erosion.
- Maintaining unobstructed drainageways helps to accelerate the removal of excess water.
- Harvesting crops as soon as possible helps to overcome the wetness limitation.

Pasture and hayland

Suitability: Moderately suited

Management concerns: Wetness

Management measures and considerations:

- Installing and maintaining a drainage system help to control the water table.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Poorly suited

Productivity class: Moderately high

Management concerns: Equipment limitations, windthrow hazard, and seedling survival

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Artificial drainageways should be maintained, and wetness-tolerant trees should be selected for planting.
- Planting seedlings on bedded ridges helps to reduce seedling mortality rates.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Thinning the stand lightly and at frequent intervals helps to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees.

Urban development

Suitability: Poorly suited

Management concerns: Wetness

Management measures and considerations:

- This map unit is not recommended for urban development.
- A site on a more suitable soil should be considered.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.

Interpretive Groups

Land capability classification: VIw

Woodland ordination symbol: 7W, based on sweetgum as the indicator species

PeA—Peawick fine sandy loam, 0 to 2 percent slopes

Setting

Landform: River or stream valleys

Landscape position: Broad stream terraces

Shape of areas: Broad and irregular

Size of areas: 20 to 300 acres

Composition

Peawick soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 7 inches—brown fine sandy loam

Subsoil:

7 to 13 inches—olive yellow loam

13 to 20 inches—brownish yellow clay loam that has red mottles

20 to 26 inches—brownish yellow clay that has red, brown, and gray mottles

26 to 55 inches—mottled red, strong brown, brownish yellow, and light gray clay

55 to 75 inches—mottled red, strong brown, and light gray clay that has pockets of sandy clay loam

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Very slow

Available water capacity: High

High water table: 1.5 to 3.0 feet below the soil surface; perched

Flooding: None

Shrink-swell potential: High

Hazard of soil blowing: Moderate

Hazard of water erosion: Slight

Slope class: Nearly level

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The well drained McQueen soils that have a red subsoil and are on the higher parts of the landscape
- The somewhat poorly drained Hornsboro soils on the slightly lower parts of the landscape or in depressional areas
- Somewhat poorly drained and poorly drained soils on the slightly lower parts of the landscape or in depressional areas
- Soils that have a loamy subsoil and occur in random areas throughout the landscape

Similar inclusions:

- The rarely flooded Peawick soils
- Soils that have a subsoil that does not extend below a depth of 60 inches and is thinner than that of the Peawick soil

Use and Management

Major Uses: Cropland, pasture and hayland, and woodland

Cropland

Suitability: Well suited

Management concerns: Wetness and erosion

Management measures and considerations:

- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.
- Maintaining unobstructed drainageways helps to accelerate the removal of excess water.
- An artificial or surface drainage system, or both, may be needed if moisture-sensitive crops are grown.
- Wind stripcropping (where blowing sand is a hazard) and field borders help to control erosion.
- Harvesting crops as soon as possible helps to overcome the wetness limitation.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns: Equipment limitations

Management measures and considerations:

- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Poorly suited

Management concerns: Wetness, restricted permeability, and shrink-swell potential

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- A site on a more suitable soil should be considered.

Interpretive Groups*Land capability classification:* 1lw*Woodland ordination symbol:* 8W, based on loblolly pine as the indicator species**PeB—Peawick fine sandy loam, 2 to 6 percent slopes****Setting***Landform:* River or stream valleys*Landscape position:* Broad stream terraces*Shape of areas:* Broad and irregular*Size of areas:* 20 to 500 acres**Composition**

Peawick soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile*Surface layer:*

0 to 7 inches—brown fine sandy loam

Subsoil:

7 to 13 inches—olive yellow loam

13 to 20 inches—brownish yellow clay loam that has red mottles

20 to 26 inches—brownish yellow clay that has red, brown, and gray mottles

26 to 55 inches—mottled red, strong brown, brownish yellow, and light gray clay

55 to 75 inches—mottled red, strong brown, and light gray clay that has pockets of sandy clay loam

Soil Properties and Qualities*Depth class:* Very deep*Drainage class:* Moderately well drained*Permeability:* Very slow*Available water capacity:* High*High water table:* 1.5 to 3.0 feet below the soil surface; perched*Flooding:* None*Shrink-swell potential:* High*Hazard of soil blowing:* Moderate*Hazard of water erosion:* Moderate*Slope class:* Gently sloping*Depth to bedrock:* Greater than 60 inches**Inclusions***Contrasting inclusions:*

- The well drained McQueen soils that have a red subsoil and are on the higher parts of the landscape
- The somewhat poorly drained Hornsboro soils on the slightly lower parts of the landscape or in depressional areas
- Somewhat poorly drained and poorly drained soils on the slightly lower parts of the landscape or in depressional areas
- Soils that have a loamy subsoil and occur in random areas throughout the landscape
- The somewhat poorly drained Chewacla soils that have a loamy subsoil and are on flood plains

Similar inclusions:

- The rarely flooded Peawick soils
- Soils that have a subsoil that does not extend below a depth of 60 inches and is thinner than that of the Peawick soil

Use and Management**Major Uses:** Cropland, pasture and hayland, and woodland**Cropland***Suitability:* Well suited*Management concerns:* Wetness and erosion*Management measures and considerations:*

- An artificial or surface drainage system, or both, may be needed if moisture-sensitive crops are grown.
- Maintaining unobstructed drainageways helps to accelerate the removal of excess water.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.
- Harvesting crops as soon as possible helps to overcome the wetness limitation.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns: Equipment limitations

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Poorly suited

Management concerns: Wetness, restricted permeability, and shrink-swell potential

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: IIe

Woodland ordination symbol: 8W, based on loblolly pine as the indicator species

PfA—Peawick silt loam, 0 to 3 percent slopes, rarely flooded

Setting

Landform: River or stream valleys

Landscape position: Broad stream terraces

Shape of areas: Broad and irregular

Size of areas: 10 to 80 acres

Composition

Peawick soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 4 inches—brown silt loam

Subsoil:

4 to 9 inches—brownish yellow silt loam

9 to 20 inches—olive yellow silty clay

20 to 33 inches—light yellowish brown silty clay that has yellow, red, and gray mottles

33 to 65 inches—mottled brownish yellow, light gray, and strong brown clay

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Very slow

Available water capacity: High

High water table: 1.5 to 3.0 feet below the soil surface; perched

Flooding: Rare

Shrink-swell potential: High

Hazard of water erosion: Slight

Slope class: Nearly level

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The well drained McQueen soils that have a red subsoil and are on the higher parts of the landscape
- The somewhat poorly drained Hornsboro soils on the slightly lower parts of the landscape or in depressional areas
- Somewhat poorly drained and poorly drained soils on the slightly lower parts of the landscape or in depressional areas
- Somewhat poorly drained and poorly drained soils along narrow drainageways
- Soils that have a loamy subsoil and occur in random areas throughout the landscape
- The somewhat poorly drained Chewacla soils that have a loamy subsoil and are on flood plains

Similar inclusions:

- Soils that have a subsoil that does not extend below a depth of 60 inches and is thinner than that of the Peawick soil

Use and Management

Major Uses: Cropland, pasture, and woodland

Cropland

Suitability: Moderately suited

Management concerns: Wetness and rare flooding

Management measures and considerations:

- Harvesting crops as soon as possible helps to overcome the wetness limitation.
- An artificial or surface drainage system, or both, may be needed if moisture-sensitive crops are grown.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.
- Maintaining unobstructed drainageways helps to accelerate the removal of excess water.
- Flood-control measures are needed to minimize damage to crops.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction and rare flooding

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Flooding may be a hazard to livestock.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns: Equipment limitations and rare flooding

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.

Urban development

Suitability: Poorly suited

Management concerns: Wetness, rare flooding, restricted permeability, and shrink-swell potential

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- Flood-control structures may be needed.
- The County Building Inspector should be contacted prior to constructing buildings in areas that are subject to flooding; a permit may be required.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: 1lw

Woodland ordination symbol: 8W, based on loblolly pine as the indicator species

PoA—Pelion loamy sand, 0 to 2 percent slopes***Setting***

Landform: Uplands of the Coastal Plain and Sandhills

Landscape position: Low, broad ridges

Shape of areas: Irregular

Size of areas: 5 to 50 acres

Composition

Pelion soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 2 inches—grayish brown loamy sand

Subsurface layer:

2 to 13 inches—light yellowish brown loamy sand

Subsoil:

13 to 29 inches—brownish yellow sandy clay loam that has red mottles

29 to 41 inches—brownish yellow sandy clay loam that has gray mottles

41 to 70 inches—brownish yellow sandy clay loam that has red and gray mottles

Underlying material:

70 to 75 inches—reddish yellow sandy loam that has yellow mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderately slow or slow

Available water capacity: High

High water table: 1.0 to 2.5 feet below the soil surface; perched

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Moderate

Hazard of water erosion: Slight

Slope class: Nearly level

Depth to bedrock: Greater than 60 inches

Inclusions*Contrasting inclusions:*

- The very poorly drained Johnston soils on flood plains
- The very poorly drained Paxville soils in low areas and in depressions
- The well drained Ailey soils that have a sandy surface layer 20 to 40 inches thick over the subsoil and are on the higher parts of the landscape
- Well drained soils on the higher parts of the landscape
- Somewhat poorly drained and poorly drained soils in low areas

Use and Management

Major Uses: Woodland, cropland, and pasture and hayland

Cropland

Suitability: Well suited

Management concerns: Wetness and erosion

Management measures and considerations:

- An artificial or surface drainage system, or both, may be needed if moisture-sensitive crops are grown.
- Harvesting crops as soon as possible helps to overcome the wetness limitation.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.
- Wind stripcropping (where blowing sand is a hazard) and field borders help to control erosion.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod

management, and weed control help to prevent compaction and maintain quality forage.

- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Equipment limitations and windthrow hazard

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Thinning the stand lightly and at frequent intervals helps to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees.

Urban development

Suitability: Poorly suited

Management concerns: Wetness and restricted permeability

Management measures and considerations:

- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: 1lw

Woodland ordination symbol: 8W, based on loblolly pine as the indicator species

PoB—Pelion loamy sand, 2 to 8 percent slopes**Setting**

Landform: Uplands of the Coastal Plain and Sandhills

Landscape position: Low, broad ridges

Shape of areas: Irregular
Size of areas: 10 to 200 acres

Composition

Pelion soil and similar inclusions: 85 percent
 Contrasting inclusions: 15 percent

Typical Profile

Surface layer:
 0 to 2 inches—grayish brown loamy sand

Subsurface layer:
 2 to 13 inches—light yellowish brown loamy sand

Subsoil:
 13 to 29 inches—brownish yellow sandy clay loam that has red mottles
 29 to 41 inches—brownish yellow sandy clay loam that has gray mottles
 41 to 70 inches—brownish yellow sandy clay loam that has red and gray mottles

Underlying material:
 70 to 75 inches—reddish yellow sandy loam that has yellow mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow or slow
Available water capacity: High
High water table: 1.0 to 2.5 feet below the soil surface; perched
Flooding: None
Shrink-swell potential: Low
Hazard of soil blowing: Moderate
Hazard of water erosion: Slight
Slope class: Gently sloping
Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The very poorly drained Johnston soils on flood plains
- The very poorly drained Paxville soils in low areas and in depressions
- The well drained Ailey soils that have a 20- to 40-inch-thick sandy surface layer and are on the higher parts of the landscape
- Well drained soils on the higher parts of the landscape
- Somewhat poorly drained and poorly drained soils in low areas and along narrow drainageways

Use and Management

Major Uses: Woodland, cropland, pasture and hayland, and urban development

Cropland

Suitability: Well suited
Management concerns: Wetness and erosion
Management measures and considerations:

- An artificial or surface drainage system, or both, may be needed if moisture-sensitive crops are grown.
- Harvesting crops as soon as possible helps to overcome the wetness limitation.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.
- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.

Pasture and hayland

Suitability: Well suited
Management concerns: Compaction and erosion
Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited
Productivity class: Moderately high
Management concerns: Equipment limitations and windthrow hazard
Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.

- Thinning the stand lightly and at frequent intervals helps to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees.

Urban development

Suitability: Poorly suited

Management concerns: Wetness and restricted permeability

Management measures and considerations:

- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: IIe

Woodland ordination symbol: 8W, based on loblolly pine as the indicator species

PoC—Pelion loamy sand, 8 to 15 percent slopes

Setting

Landform: Uplands of the Coastal Plain and Sandhills

Landscape position: Side slopes

Shape of areas: Irregular

Size of areas: 20 to 150 acres

Composition

Pelion soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 2 inches—grayish brown loamy sand

Subsurface layer:

2 to 13 inches—light yellowish brown loamy sand

Subsoil:

13 to 29 inches—brownish yellow sandy clay loam that has red mottles

29 to 41 inches—brownish yellow sandy clay loam that has gray mottles

41 to 70 inches—brownish yellow sandy clay loam that has red and gray mottles

Underlying material:

70 to 75 inches—reddish yellow sandy loam that has yellow mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderately slow or slow

Available water capacity: High

High water table: 1.0 to 2.5 feet below the soil surface; perched

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Moderate

Hazard of water erosion: Moderate

Slope class: Strongly sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The very poorly drained Johnston soils on flood plains
- The very poorly drained Paxville soils in low areas and in depressions
- The well drained Ailey soils that have a 20- to 40-inch-thick sandy surface layer and are on the higher parts of the landscape
- Well drained soils on the higher parts of the landscape
- The somewhat excessively drained Candor and Wakulla soils that have a 20- to 40-inch-thick sandy surface layer and are on the upper and lower side slopes
- Somewhat poorly drained and poorly drained soils in low areas and along narrow drainageways

Use and Management

Major Uses: Woodland, cropland, and pasture

Cropland

Suitability: Poorly suited

Management concerns: Wetness and erosion

Management measures and considerations:

- This map unit is not recommended for cropland.
- An artificial or surface drainage system, or both, may be needed if moisture-sensitive crops are grown.
- Harvesting crops as soon as possible helps to overcome the wetness limitation.
- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability for pasture: Well suited

Suitability for hayland: Moderately suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Equipment limitations and windthrow hazard

Management measures and considerations:

- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Thinning the stand lightly and at frequent intervals helps to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees.

Urban development

Suitability: Poorly suited

Management concerns: Wetness, restricted permeability, erosion, and slope

Management measures and considerations:

- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Vegetating all cleared and graded areas as soon as

possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: IVe

Woodland ordination symbol: 8W, based on loblolly pine as the indicator species

PrB—Pelion-Urban land complex, 0 to 8 percent slopes

Setting

Landform: Uplands of the Coastal Plain and Sandhills

Landscape position: Low, broad ridges

Shape of areas: Irregular

Size of areas: 20 to 100 acres

Composition

Pelion soil and similar inclusions: 50 percent

Urban land: 35 percent

Contrasting inclusions: 15 percent

Typical Profile

Pelion

Surface layer:

0 to 2 inches—grayish brown loamy sand

Subsurface layer:

2 to 13 inches—light yellowish brown loamy sand

Subsoil:

13 to 29 inches—brownish yellow sandy clay loam that has red mottles

29 to 41 inches—brownish yellow sandy clay loam that has gray mottles

41 to 70 inches—brownish yellow sandy clay loam that has red and gray mottles

Underlying material:

70 to 75 inches—reddish yellow sandy loam that has yellow mottles

Urban land

Urban land consists of areas where 35 percent of the surface is covered by concrete, asphalt, buildings, or other impervious materials.

Soil Properties and Qualities

Pelion

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderately slow or slow
Available water capacity: High
High water table: 1.0 to 2.5 feet below the soil surface;
 perched
Flooding: None
Shrink-swell potential: Low
Hazard of soil blowing: Moderate
Hazard of water erosion: Slight
Slope class: Nearly level or gently sloping
Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The very poorly drained Johnston soils on flood plains
- The very poorly drained Paxville soils in low areas and in depressions
- The well drained Ailey soils that have a 20- to 40-inch-thick sandy surface layer and are on the higher parts of the landscape
- Well drained soils on the higher parts of the landscape
- Somewhat poorly drained and poorly drained soils in depressions and along narrow drainageways

Use and Management

Major Uses: Dwellings, shopping centers, parking lots, and roads

Cropland

Suitability:

- This map unit is not used for cropland.

Pasture and hayland

Suitability:

- This map unit is not used for pasture and hayland.

Woodland

Suitability:

- This map unit is not used for woodland.

Urban development

Suitability: Poorly suited

Management concerns: Wetness and restricted permeability

Management measures and considerations:

- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: Pelion—Ile; Urban land—VIIIs

Woodland ordination symbol: None assigned

PrC—Pelion-Urban land complex, 8 to 15 percent slopes

Setting

Landform: Uplands of the Coastal Plain and Sandhills

Landscape position: Side slopes

Shape of areas: Irregular

Size of areas: 10 to 50 acres

Composition

Pelion soil and similar inclusions: 50 percent

Urban land: 40 percent

Contrasting inclusions: 10 percent

Typical Profile

Pelion

Surface layer:

0 to 2 inches—grayish brown loamy sand

Subsurface layer:

2 to 13 inches—light yellowish brown loamy sand

Subsoil:

13 to 29 inches—brownish yellow sandy clay loam that has red mottles

29 to 41 inches—brownish yellow sandy clay loam that has gray mottles

41 to 70 inches—brownish yellow sandy clay loam that has red and gray mottles

Underlying material:

70 to 75 inches—reddish yellow sandy loam that has yellow mottles

Urban land

Urban land consists of areas where 40 percent of the surface is covered by concrete, asphalt, buildings, or other impervious materials.

Soil Properties and Qualities

Pelion

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderately slow or slow

Available water capacity: High

High water table: 1.0 to 2.5 feet below the soil surface;
 perched

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Moderate

Hazard of water erosion: Moderate

Slope class: Strongly sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The very poorly drained Johnston soils on flood plains
- The very poorly drained Paxville soils in low areas and in depressions
- The well drained Ailey soils that have a 20- to 40-inch-thick sandy surface layer and are on the higher parts of the landscape
- Well drained soils on the higher parts of the landscape
- The somewhat excessively drained Candor and Wakulla soils that have a 20- to 40-inch-thick sandy surface layer and are on the upper and lower side slopes
- Somewhat poorly drained and poorly drained soils in depressions and along narrow drainageways

Use and Management

Major Uses: Dwelling, shopping centers, parking lots, and roads

Cropland

Suitability:

- This map unit is not used for cropland.

Pasture and hayland

Suitability:

- This map unit is not used for pasture and hayland.

Woodland

Suitability:

- This map unit is not used for woodland.

Urban development

Suitability: Poorly suited

Management concerns: Wetness, restricted permeability, erosion, and slope

Management measures and considerations:

- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.

- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- A site on a more suitable soil should be considered.

Interpretive Groups

Land capability classification: Pelion—VIe; Urban land—VIIIs

Woodland ordination symbol: None assigned

PsC—Pinkston fine sandy loam, 4 to 15 percent slopes, very stony

Setting

Landform: Piedmont uplands

Landscape position: Ridgetops and side slopes

Shape of areas: Narrow and elongated

Size of areas: 10 to 80 acres

Composition

Pinkston soil and similar inclusions: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

Surface layer:

0 to 2 inches—yellowish brown fine sandy loam

Subsoil:

2 to 16 inches—strong brown fine sandy loam

16 to 20 inches—strong brown silt loam that has brown mottles

Underlying material:

20 to 32 inches—dark reddish brown silt loam saprolite that has gray streaks

Bedrock:

32 to 39 inches—dark reddish brown soft, weathered sandstone bedrock that has gray streaks

39 inches—hard, unweathered sandstone bedrock

Soil Properties and Qualities

Depth class: Moderately deep

Drainage class: Well drained to excessively drained

Permeability: Moderately rapid

Available water capacity: Low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of water erosion: Severe

Rock fragments on the surface: About 2.0 percent stones and boulders averaging about 18 inches in diameter and about 10 feet apart

Slope class: Gently sloping or strongly sloping

Type of bedrock: Triassic sandstone and siltstone

Depth to bedrock: 20 to 36 inches to soft, weathered bedrock; 20 to 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- The well drained Mayodan soils that have a clayey subsoil, have bedrock at a depth of more than 60 inches, and are on the more sloping parts of the landscape
- The well drained Exway soils that have a clayey subsoil and occur in areas throughout the landscape
- Soils that have bedrock at depths between 10 and 20 inches and occur in random areas throughout the landscape
- Soils that have bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- Clayey soils that are dark red throughout, have bedrock at a depth of more than 60 inches, and are on the more level parts of the landscape

Similar inclusions:

- Soils that have soft, weathered bedrock at depths between 20 and 40 inches

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited

Management concerns: Droughtiness, erosion, and stony surface

Management measures and considerations:

- This map unit is not recommended for cropland.

Pasture and hayland

Suitability for pasture: Moderately suited

Suitability for hayland: Poorly suited

Management concerns: Erosion, droughtiness, and stony surface

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Surface stones may limit the use of equipment and be hazardous.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Windthrow hazard, equipment limitations, and seedling survival

Management measures and considerations:

- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Using tracked or low-pressure ground equipment for harvesting helps to minimize rutting and compaction.
- Stones and boulders on the surface may hinder logging and planting operations.
- Planting seedlings during wet and cool periods helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited

Management concerns: Depth to bedrock, stony surface, droughtiness, erosion, and slope

Management measures and considerations:

- A site on a more suitable soil should be considered.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.
- Special equipment may be needed to remove excessive stones and boulders.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- Because of the droughtiness, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.

Interpretive Groups

Land capability classification: VI_s

Woodland ordination symbol: 7X, based on loblolly pine as the indicator species

Pt—Pits, quarry

Setting

Landform: Any landform

Landscape position: Ridges and side slopes

Shape of areas: Irregular
Size of areas: 4 to 40 acres

Composition

Pits: 90 percent
 Contrasting inclusions: 10 percent

Inclusions

Contrasting inclusions:

- Somewhat poorly drained and poorly drained soils in depressions and low areas

Use and Management

The quarries consist of active mining sites where materials are being removed for use as construction material and certain industrial purposes. Therefore, the depth of the pits and the size of the areas are constantly changing. Because the mining sites are active, this map unit is considered unsuited for cropland, pasture and hayland, woodland, and urban uses.

Interpretive Groups

Land capability classification: VIIIs
Woodland ordination symbol: None assigned

RvA—Riverview loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: River or stream valleys
Landscape position: Flood plains
Shape of areas: Irregular or elongated
Size of areas: 20 to 200 acres

Composition

Riverview soil and similar inclusions: 90 percent
 Contrasting inclusions: 10 percent

Typical Profile

Surface layer:

0 to 11 inches—dark yellowish brown loam

Subsoil:

11 to 36 inches—yellowish brown loam that has brown mottles

36 to 55 inches—yellowish brown loam that has red and brown mottles

Underlying material:

55 to 62 inches—yellowish brown sandy loam that has strata of silty clay loam and brown mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

High water table: 3.0 to 5.0 feet below the soil surface; apparent

Flooding: Occasional

Shrink-swell potential: Low

Hazard of water erosion: Slight

Slope class: Nearly level

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The somewhat poorly drained Chewacla soils on the lower parts of the landscape
- Sandy soils adjacent to the larger stream channels
- Moderately well drained soils on the lower parts of the landscape
- Poorly drained soils along narrow drainageways

Use and Management

Major Uses: Cropland, pasture and hayland, and woodland

Cropland

Suitability: Well suited

Management concerns: Occasional flooding

Management measures and considerations:

- Flood-control measures are needed to minimize damage to crops.
- Harvesting crops as soon as possible helps to reduce the potential for damage caused by flooding.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland

Suitability: Well suited

Management concerns: Occasional flooding

Management measures and considerations:

- Flooding may be a hazard to livestock.
- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: High

Management concerns:

- This map unit has few limitations affecting woodland management.

Management measures and considerations:

- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial streams.
- The ground surface in filter strips should be disturbed as little as possible.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.
- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.

Urban development

Suitability: Poorly suited

Management concerns: Occasional flooding and wetness

Management measures and considerations:

- This map unit is not recommended for urban development.
- A site on a more suitable soil should be considered.
- The County Building Inspector should be contacted prior to constructing buildings in areas that are subject to flooding; a permit may be required.
- Flood-control structures may be needed.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Building structures on the highest part of the landscape and installing artificial drainage systems help to overcome the wetness limitation.
- Land shaping may be needed to remove excess surface water or direct it away from structures.

Interpretive Groups

Land capability classification: IIw

Woodland ordination symbol: 11A, based on loblolly pine as the indicator species

TbA—Turbeville sandy loam, 0 to 2 percent slopes

Setting

Landform: River or stream valleys and uplands of the Coastal Plain and Piedmont

Landscape position: Broad ridges on high stream terraces

Shape of areas: Irregular

Size of areas: 20 to 100 acres

Composition

Turbeville soil and similar inclusions: 90 percent

Contrasting inclusions: 10 percent

Typical Profile

Surface layer:

0 to 6 inches—reddish brown sandy loam

Subsoil:

6 to 10 inches—red sandy clay

10 to 61 inches—red clay

61 to 75 inches—red sandy clay that has yellow mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of soil blowing: Moderate

Hazard of water erosion: Slight

Slope class: Nearly level

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Norfolk soils that have a loamy subsoil that is yellower than that of the Turbeville soil and are on the lower parts of the landscape adjacent to drainageways
- Orangeburg soils that have a loamy subsoil and are near the outer edge of the map unit delineations
- Ailey soils that have a 20- to 40-inch-thick sandy surface layer and are on the higher parts of the landscape
- Soils that have high amounts of gravel in the surface layer and occur in random areas throughout the southwestern part of the county

Use and Management

Major Uses: Cropland, woodland, pasture and hayland, and urban development

Cropland

Suitability: Well suited

Management concerns:

- This map unit has no major limitations affecting cropland management.

Management measures and considerations:

- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns:

- This map unit has few limitations affecting woodland management.
- Management measures and considerations:*
 - Higher standard roads are needed due to the high content of clay.
 - Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.
 - Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability and shrink-swell potential

Management measures and considerations:

- This map unit has few limitations affecting urban development.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.

Interpretive Groups

Land capability classification: I

Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

TbB—Turbeville sandy loam, 2 to 8 percent slopes

Setting

Landform: River or stream valleys and uplands of the Coastal Plain and Piedmont

Landscape position: Broad ridges on high stream terraces

Shape of areas: Irregular

Size of areas: 10 to 500 acres

Composition

Turbeville soil and similar inclusions: 90 percent

Contrasting inclusions: 10 percent

Typical Profile

Surface layer:

0 to 6 inches—reddish brown sandy loam

Subsoil:

6 to 10 inches—red sandy clay

10 to 61 inches—red clay

61 to 75 inches—red sandy clay that has yellow mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of soil blowing: Moderate

Hazard of water erosion: Moderate

Slope class: Gently sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Eroded soils that have a surface layer of sandy clay loam and occur in random areas throughout the landscape
- Norfolk soils that have a loamy subsoil that is yellower than that of the Turbeville soil and occur on the lower parts of the landscape in areas adjacent to drainageways
- Orangeburg soils that have a loamy subsoil and are near the outer edge of the map unit delineations
- Ailey soils that have a 20- to 40-inch-thick sandy surface layer and are on the higher parts of the landscape
- Soils that have high amounts of gravel in the surface layer and occur in random areas throughout the southwestern part of the county

Use and Management

Major Uses: Cropland, woodland, pasture and hayland, and urban development

Cropland

Suitability: Well suited

Management concerns: Erosion

Management measures and considerations:

- Contour farming, terraces, common stripcropping, wind

strip cropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.

- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Well suited

Productivity class: Moderately high

Management concerns:

- This map unit has few limitations affecting woodland management.
- Management measures and considerations:*
- Higher standard roads are needed due to the high content of clay.
- Site preparation practices, such as chopping, burning, and applications of herbicide, help to reduce plant competition and seedling mortality rates.
- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting and compaction.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability and shrink-swell potential

Management measures and considerations:

- This map unit has few limitations affecting urban development.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.

Interpretive Groups

Land capability classification: IIe

Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

Ud—Udorthents, loamy

Setting

Landform: Any landform

Landscape position: Broad upland ridges and side slopes

Shape of areas: Irregular

Size of areas: 5 to 80 acres

Composition

Udorthents: 90 percent

Contrasting inclusions: 10 percent

Typical Profile

A typical pedon is not given due to the variable nature of the soil material.

Soil Properties and Qualities

Depth class: 2 to 20 feet or more

Drainage class: Moderately well drained or well drained

Permeability: Rapid to slow

High water table: Variable, according to landscape type and position; apparent or perched

Flooding: None

Shrink-swell potential: Variable

Slope class: Nearly level to moderately steep

Type of bedrock: Variable

Depth to bedrock: Variable

Inclusions

Contrasting inclusions:

- Small, randomly occurring areas of natural, undisturbed soils
- Somewhat poorly drained and poorly drained soils in depressional areas

Use and Management

Because these soils are so variable in nature, they cannot be accurately rated for their suitability for cropland, pasture and hayland, woodland, or urban uses. Areas of these soils are generally unsuited to most uses unless they are filled or reclaimed and planted with vegetation.

Interpretive Groups

Land capability classification: VIIIs

Woodland ordination symbol: None assigned

Ur—Urban land

Setting

Landform: Any landform

Landscape position: Broad ridges and side slopes
Shape of areas: Irregular
Size of areas: 5 to 50 acres

Composition

Urban land: 85 percent
 Contrasting inclusions: 15 percent

Soil Properties and Qualities

Depth class: Variable
Drainage class: Variable
Permeability: Impermeable
High water table: 2.0 feet or more below the surface;
 apparent or perched
Flooding: None
Shrink-swell potential: Variable
Hazard of water erosion: Variable
Slope class: Nearly level to strongly sloping
Type of bedrock: Variable
Depth to bedrock: Variable

Inclusions

Contrasting inclusions:

- Small areas of soils that are not covered with impermeable materials

Use and Management

This map unit is used for urban development, including parking lots, roads, buildings, and driveways. It is not used for cropland, pasture and hayland, or woodland. The suitability of this unit for urban development and the management concerns and measures for this use vary according to soil properties and qualities.

Interpretive Groups

Land capability classification: VIIIs
Woodland ordination symbol: None assigned

UwB2—Uwharrie clay loam, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 10 to 300 acres

Composition

Uwharrie soil and similar inclusions: 85 percent
 Contrasting inclusions: 15 percent

Typical Profile

Surface layer:
 0 to 6 inches—reddish yellow clay loam

Subsoil:
 6 to 12 inches—reddish yellow silty clay loam
 12 to 50 inches—red clay
 50 to 62 inches—red silty clay loam

Underlying material:
 62 to 80 inches—weak red silt loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Depth to high water table: Greater than 6 feet
Flooding: None
Shrink-swell potential: Moderate
Hazard of water erosion: Severe
Slope class: Gently sloping
Type of bedrock: Carolina Slate
Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Badin soils that have soft bedrock at depths between 20 and 40 inches and that generally occur in random areas throughout the map unit but commonly are on the most sloping parts of the landscape
- Soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 20 and 40 inches, and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 40 and 60 inches, and are on the steeper parts of the landscape
- Soils that have a loamy subsoil and occur in random areas throughout the map unit

Similar inclusions:

- Soils that have a subsoil that is yellower than that of the Uwharrie soil
- Slightly eroded soils that have a surface layer of silt loam

Use and Management

Major Uses: Woodland, cropland, pasture and hayland, and urban development

Cropland

Suitability: Moderately suited
Management concerns: Erosion and tillage
Management measures and considerations:
 • Contour farming, terraces, stripcropping, diversions,

grassed waterways, and field borders help to control erosion.

- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland

Suitability: Well suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Equipment limitations and seedling survival

Management measures and considerations:

- Logging during periods when the soil is not wet helps to prevent rutting and compaction.
- Planting seedlings during wet and cool periods in areas where the soil is droughty, planting on bedded ridges in areas where the soil is wet, and minimizing site preparation help to reduce seedling mortality rates.
- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability, shrink-swell potential, and erosion

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Land shaping may be needed to remove surface water in the less sloping areas.
- Reinforcing foundations and footings and removing soil

and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.

- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

Interpretive Groups

Land capability classification: IIIe

Woodland ordination symbol: 7C, based on loblolly pine as the indicator species

UwC2—Uwharrie clay loam, 8 to 15 percent slopes, eroded

Setting

Landform: Piedmont uplands

Landscape position: Ridges and side slopes

Shape of areas: Irregular

Size of areas: 20 to 400 acres

Composition

Uwharrie soil and similar inclusions: 90 percent

Contrasting inclusions: 10 percent

Typical Profile

Surface layer:

0 to 6 inches—reddish yellow clay loam

Subsoil:

6 to 12 inches—reddish yellow silty clay loam

12 to 50 inches—red clay

50 to 62 inches—red silty clay loam

Underlying material:

62 to 80 inches—weak red silt loam saprolite

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Very severe

Slope class: Strongly sloping

Type of bedrock: Carolina Slate

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Badin soils that have soft bedrock at depths between 20 and 40 inches and that occur in random areas throughout

the map unit but are more commonly on the most sloping parts of the landscape

- Soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 20 and 40 inches, and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 40 and 60 inches, and are on the steeper parts of the landscape
- Goldston soils that have a loamy subsoil, have soft bedrock at depths between 10 and 20 inches, and are in elevated areas and on the more sloping parts of the landscape

Similar inclusions:

- Soils that have a subsoil that is yellower than that of the Uwharrie soil
- Slightly eroded soils that have a surface layer of silt loam

Use and Management

Major Uses: Woodland, cropland, pasture and hayland, and urban development

Cropland

Suitability: Poorly suited

Management concerns: Erosion and tillth

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland

Suitability for pasture: Well suited

Suitability for hayland: Moderately suited

Management concerns: Compaction and erosion

Management measures and considerations:

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.

- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Equipment limitations and seedling survival

Management measures and considerations:

- Logging during periods when the soil is not wet helps to prevent rutting and compaction.
- Planting seedlings during wet and cool periods in areas where the soil is droughty, planting on bedded ridges in areas where the soil is wet, and minimizing site preparation help to reduce seedling mortality rates.
- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.

Urban development

Suitability: Moderately suited

Management concerns: Restricted permeability, shrink-swell potential, slope, and erosion

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Land shaping may be needed to remove surface water in the less sloping areas.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

Interpretive Groups

Land capability classification: IVe

Woodland ordination symbol: 7C, based on loblolly pine as the indicator species

UwD—Uwharrie loam, 15 to 25 percent slopes

Setting

Landform: Piedmont uplands

Landscape position: Side slopes

Shape of areas: Irregular

Size of areas: 20 to 400 acres

Composition

Uwharrie soil and similar inclusions: 90 percent

Contrasting inclusions: 10 percent

Typical Profile

Surface layer:

0 to 6 inches—dark yellowish brown loam

Subsoil:

6 to 45 inches—red clay

45 to 52 inches—yellowish red silty clay loam

Underlying material:

52 to 60 inches—yellowish red silt loam saprolite

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: High

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Very severe

Slope class: Moderately steep

Type of bedrock: Carolina Slate

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- Badin soils that have soft bedrock at depths between 20 and 40 inches and that occur in random areas throughout the map unit but are more commonly on the most sloping parts of the landscape
- Soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 20 and 40 inches, and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 40 and 60 inches, and occur on the steeper parts of the landscape
- Goldston soils that have a loamy subsoil, have soft bedrock at depths between 10 and 20 inches, and are in elevated areas and on the more sloping parts of the landscape

Similar inclusions:

- Soils that have a subsoil that is yellower than that of the Uwharrie soil
- Eroded soils that have a surface layer of clay loam

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited

Management concerns: Erosion and slope

Management measures and considerations:

- This map unit is not recommended for cropland.

Pasture and hayland

Suitability for pasture: Moderately suited

Suitability for hayland: Poorly suited

Management concerns: Compaction, slope, and erosion

Management measures and considerations:

- Equipment should be operated with caution because of the slope.
- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Erosion and equipment limitations

Management measures and considerations:

- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
- Skid trails should not run upslope from landings because of the hazard of erosion.
- Logging during periods when the soil is not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.

Urban development

Suitability: Poorly suited

Management concerns: Restricted permeability, shrink-swell potential, slope, and erosion

Management measures and considerations:

- This map unit is not recommended for urban development.
- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Land shaping may be needed to remove surface water in the less sloping areas.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

Interpretive Groups

Land capability classification: VIe

Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

UxB2—Uwharrie-Badin complex, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands

Landscape position: Uwharrie—broader and more level parts of ridges; Badin—steeper parts of ridges

Shape of areas: Irregular

Size of areas: 10 to 40 acres

Composition

Uwharrie soil and similar inclusions: 70 percent

Badin soil and similar inclusions: 15 percent

Contrasting inclusions: 15 percent

Typical Profile

Uwharrie

Surface layer:

0 to 6 inches—reddish yellow clay loam

Subsoil:

6 to 12 inches—reddish yellow silty clay loam

12 to 50 inches—red clay

50 to 62 inches—red silty clay loam

Underlying material:

62 to 80 inches—weak red silt loam saprolite

Badin

Surface layer:

0 to 3 inches—brown silty clay loam

Subsoil:

3 to 7 inches—red silty clay loam

7 to 18 inches—red silty clay

18 to 23 inches—red channery silty clay loam that has brown mottles

Bedrock:

23 to 41 inches—mottled red, reddish brown, and strong brown soft, weathered slate bedrock

41 inches—hard, unweathered slate bedrock

Soil Properties and Qualities

Depth class: Uwharrie—very deep; Badin—moderately deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: Uwharrie—high; Badin—low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Severe

Slope class: Gently sloping

Type of bedrock: Carolina Slate

Depth to bedrock: Uwharrie—greater than 60 inches; Badin—20 to 40 inches to soft, weathered bedrock and greater than 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- Soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
 - Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 20 and 40 inches, and occur in random areas throughout the landscape
 - Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 40 and 60 inches, and are on the steeper parts of the landscape
 - Goldston soils that have a loamy subsoil, have soft bedrock at depths between 10 and 20 inches, and are in elevated areas and on the more sloping parts of the landscape
- Similar inclusions:*
- Slightly eroded soils that have a surface layer of silt loam and occur in random areas throughout the landscape
 - Soils that have a subsoil that is yellower than that of the Uwharrie and Badin soils

Use and Management

Major Uses: Woodland, cropland, and pasture

Cropland

Suitability: Uwharrie—moderately suited; Badin—poorly suited

Management concerns: Uwharrie—erosion and tilth; Badin—erosion, tilth, and droughtiness

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions may be necessary for the economic production of crops.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.

Pasture and hayland

Suitability: Well suited

Management concerns: Uwharrie—erosion and compaction; Badin—erosion, compaction, and droughtiness

Management measures and considerations:

- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Uwharrie—equipment limitations, erosion, and seedling survival; Badin—equipment limitations, erosion, seedling survival, and windthrow hazard

Management measures and considerations:

- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.
- Logging during periods when the soils are not wet and

using low-pressure ground equipment help to minimize rutting and compaction.

- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.

Urban development

Suitability: Uwharrie—moderately suited; Badin—poorly suited

Management concerns: Uwharrie—erosion, restricted permeability, and shrink-swell potential; Badin—erosion, restricted permeability, depth to bedrock, and shrink-swell potential

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Land shaping may be needed to remove surface water in the less sloping areas.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.

Interpretive Groups

Land capability classification: Uwharrie—IIIe; Badin—IVe

Woodland ordination symbol: Based on loblolly pine as the indicator species, 7C in areas of the Uwharrie soil and 6D in areas of the Badin soil

UxC2—Uwharrie-Badin complex, 8 to 15 percent slopes, eroded

Setting

Landform: Piedmont uplands

Landscape position: Uwharrie—broader parts of ridges and side slopes; Badin—steeper parts of ridges and side slopes

Shape of areas: Irregular

Size of areas: 10 to 300 acres

Composition

Uwharrie soil and similar inclusions: 65 percent

Badin soil and similar inclusions: 20 percent

Contrasting inclusions: 15 percent

Typical Profile

Uwharrie

Surface layer:

0 to 6 inches—reddish yellow clay loam

Subsoil:

6 to 12 inches—reddish yellow silty clay loam

12 to 50 inches—red clay

50 to 62 inches—red silty clay loam

Underlying material:

62 to 80 inches—weak red silt loam saprolite

Badin

Surface layer:

0 to 3 inches—brown silty clay loam

Subsoil:

3 to 7 inches—red silty clay loam

7 to 18 inches—red silty clay

18 to 23 inches—red channery silty clay loam that has brown mottles

Bedrock:

23 to 41 inches—mottled red, reddish brown, and strong brown soft, weathered slate bedrock

41 inches—hard, unweathered slate bedrock

Soil Properties and Qualities

Depth class: Uwharrie—very deep; Badin—moderately deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: Uwharrie—high; Badin—low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Very severe

Slope class: Strongly sloping

Type of bedrock: Carolina Slate

Depth to bedrock: Uwharrie—greater than 60 inches; Badin—20 to 40 inches to soft, weathered bedrock and greater than 40 inches to hard, unweathered bedrock

Inclusions

Contrasting inclusions:

- Soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 20 and 40 inches, and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 40 and 60 inches, and are on the steeper parts of the landscape
- Goldston soils that have a loamy subsoil, have soft bedrock at depths between 10 and 20 inches, and are in elevated areas and on the more sloping parts of the landscape

Similar inclusions:

- Slightly eroded soils that have a surface layer of silt loam and occur in random areas throughout the landscape
- Soils that have a subsoil that is yellower than that of the Uwharrie and Badin soils

Use and Management

Major Uses: Woodland, cropland, and pasture

Cropland

Suitability: Uwharrie—poorly suited; Badin—unsuited

Management concerns: Uwharrie—erosion and tilth; Badin—erosion, tilth, and droughtiness

Management measures and considerations:

- Contour farming, terraces, stripcropping, diversions, grassed waterways, and field borders help to control erosion.
- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Tillage should be restricted to dry periods.
- Using low-pressure ground equipment helps to minimize rutting, compaction, and clodding.
- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions may be necessary for the economic production of crops.

Pasture and hayland

Suitability for pasture: Well suited

Suitability for hayland: Moderately suited

Management concerns: Uwharrie—erosion and compaction; Badin—erosion, compaction, and droughtiness

Management measures and considerations:

- Planting on the contour when renovating pastures and

hay fields helps to reduce the hazard of erosion and increase germination.

- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Uwharrie—equipment limitations, erosion, and seedling survival; Badin—equipment limitations, erosion, seedling survival, and windthrow hazard

Management measures and considerations:

- Planting seedlings during wet and cool periods and minimizing site preparation help to reduce seedling mortality rates.
- Logging during periods when the soils are not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Skid trails should not run upslope from landings because of the hazard of erosion.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.

Urban development

Suitability: Uwharrie—moderately suited; Badin—poorly suited

Management concerns: Uwharrie—erosion, shrink-swell potential, slope, and restricted permeability; Badin—erosion, shrink-swell potential, slope, depth to bedrock, and restricted permeability

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Land shaping may be needed to remove surface water in the less sloping areas.

- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.

Interpretive Groups

Land capability classification: IVe

Woodland ordination symbol: Based on loblolly pine as the indicator species, 7C in areas of the Uwharrie soil and 6D in areas of the Badin soil

UxD—Uwharrie-Badin complex, 15 to 25 percent slopes

Setting

Landform: Piedmont uplands

Landscape position: Side slopes

Shape of areas: Irregular

Size of areas: 20 to 100 acres

Composition

Uwharrie soil and similar inclusions: 50 percent

Badin soil and similar inclusions: 35 percent

Contrasting inclusions: 15 percent

Typical Profile

Uwharrie

Surface layer:

0 to 6 inches—dark yellowish brown loam

Subsoil:

6 to 45 inches—red clay

45 to 52 inches—yellowish red silty clay loam

Underlying material:

52 to 60 inches—yellowish red silt loam saprolite

Badin

Surface layer:

0 to 5 inches—yellowish brown channery silt loam

Subsoil:

5 to 10 inches—yellowish red silty clay loam that has brown mottles

10 to 31 inches—red silty clay that has red mottles

Bedrock:

31 to 60 inches—mottled brownish yellow and red soft, weathered slate bedrock

Soil Properties and Qualities

Depth class: Uwharrie—very deep; Badin—moderately deep

Drainage class: Well drained

Permeability: Moderate

Available water capacity: Uwharrie—high; Badin—low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Moderate

Hazard of water erosion: Very severe

Slope class: Moderately steep

Type of bedrock: Carolina Slate

Depth to bedrock: Uwharrie—greater than 60 inches; Badin—20 to 40 inches to soft, weathered bedrock and greater than 40 inches to hard, unweathered bedrock

Inclusions**Contrasting inclusions:**

- Soils that have soft, weathered bedrock at depths between 40 and 60 inches and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 20 and 40 inches, and occur in random areas throughout the landscape
- Soils that have a loamy subsoil, have soft, weathered bedrock at depths between 40 and 60 inches, and are on the steeper parts of the landscape
- Goldston soils that have a loamy subsoil, have soft bedrock at depths between 10 and 20 inches, and are in elevated areas and on the more sloping parts of the landscape
- Eroded soils that have a surface layer of silty clay loam and occur in random areas throughout the landscape

Use and Management

Major Uses: Woodland and pasture

Cropland

Suitability: Unsited

Management concerns: Uwharrie—erosion and slope; Badin—erosion, slope, and droughtiness

Management measures and considerations:

- This map unit is not recommended for cropland.

Pasture and hayland

Suitability for pasture: Moderately suited

Suitability for hayland: Poorly suited

Management concerns: Uwharrie—slope, compaction,

and erosion; Badin—slope, compaction, droughtiness, and erosion

Management measures and considerations:

- Equipment should be operated with caution because of the slope.
- Controlled grazing, limited grazing during wet periods, the use of low-pressure ground equipment, sod management, and weed control help to prevent compaction and maintain quality forage.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Intensive grazing practices maximize forage utilization and improve forage quality.

Woodland

Suitability: Moderately suited

Productivity class: Moderately high

Management concerns: Uwharrie—equipment limitations, erosion, and seedling survival; Badin—equipment limitations, erosion, seedling survival, and windthrow hazard

Management measures and considerations:

- Higher standard roads are needed due to the high content of clay.
- Constructing roads, fire lanes, and skid trails on the contour and stabilizing areas with permanent plant cover immediately after logging operations help to control erosion.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion.
- Skid trails should not run upslope from landings because of the hazard of erosion.
- Logging during periods when the soils are not wet and using low-pressure ground equipment help to minimize rutting and compaction.
- Establishing a buffer zone of natural vegetation helps to minimize siltation and maintain water temperature in areas along intermittent and perennial drainageways.
- Timber in these buffer strips should be cabled out so that disturbance of the ground surface is minimal.
- Extra care is needed in planning the maintenance of roads and fire lanes because of the hazard of windthrow.
- Planting shallow-rooted species and thinning the stand lightly and at frequent intervals help to reduce the hazard of windthrow.
- A harvest should be planned for windthrown trees that result from the shallow depth to bedrock.

Urban development

Suitability: Poorly suited

Management concerns: Uwharrie—erosion, shrink-swell potential, slope, and restricted permeability; Badin—

erosion, shrink-swell potential, slope, depth to bedrock, and restricted permeability

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Land shaping may be needed to remove surface water in the less sloping areas.
- The less sloping areas should be selected as construction sites or structures should be designed so that they conform with the natural slope.
- Cutting and filling help to overcome the slope.
- Reinforcing foundations and footings and removing soil and replacing it with a more suitable material, such as gravel or sand, help to reduce the shrink-swell potential.
- Vegetating all cleared and graded areas as soon as possible and constructing such structures as silt fences help to maintain soil stability and keep sediments onsite.
- Special equipment for rock drilling, blasting, or earth moving may be needed where depth to bedrock is a limitation.

Interpretive Groups

Land capability classification: VIe

Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

WcB—Wakulla and Candor soils, 0 to 8 percent slopes

Setting

Landform: Uplands of the Sandhills

Landscape position: Broad ridges

Shape of areas: Broad and irregular

Size of areas: 5 to 2,000 acres

Composition

Wakulla soil and similar inclusions: 10 to 80 percent

Candor soil and similar inclusions: 10 to 60 percent

Contrasting inclusions: 15 percent

Typical Profile

Wakulla

Surface layer:

0 to 3 inches—brown sand

Subsurface layer:

3 to 26 inches—brownish yellow sand

Subsoil:

26 to 39 inches—yellowish brown loamy sand

Underlying material:

39 to 53 inches—brownish yellow sand

53 to 70 inches—yellow sand that has brown mottles

70 to 85 inches—very pale brown sand that has brown mottles

Candor

Surface layer:

0 to 3 inches—grayish brown sand

Subsurface layer:

3 to 23 inches—light yellowish brown sand

Subsoil:

23 to 35 inches—yellowish brown loamy sand

35 to 54 inches—yellowish brown sand

54 to 62 inches—brownish yellow sand

62 to 68 inches—strong brown sandy loam that has yellow and red mottles

68 to 80 inches—yellowish red sandy clay loam that has yellow mottles

Soil Properties and Qualities

Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Wakulla—rapid; Candor—rapid to moderate

Available water capacity: Low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Severe

Hazard of water erosion: Slight

Slope class: Nearly level or gently sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The well drained Ailey soils that have a loamy subsoil and are on the more sloping parts of the landscape
- Soils that have a surface layer more than 40 inches thick and occur in random areas throughout the landscape
- Somewhat poorly drained soils in depressional areas

Similar inclusions:

- Soils that are sand throughout
- Soils that have two separate loamy subsoils

Use and Management

Major Uses: Woodland, cropland, pasture and hayland, and urban development

Cropland

Suitability: Moderately suited

Management concerns: Droughtiness, leaching of nutrients, excessive sandiness, and erosion

Management measures and considerations:

- Providing supplemental irrigation and selecting crop varieties adapted to droughty conditions are necessary for the economic production of crops.

- Winter cover crops, crop residue management, and conservation tillage help to control erosion and conserve moisture.
- Contour farming, terraces, common stripcropping, wind stripcropping (where blowing sand is a hazard), diversions, grassed waterways, and field borders help to control erosion.
- Crop rotations of grasses and legumes help to conserve soil and maintain fertility.
- Using fertilizer in split applications helps to minimize leaching.
- Lime and fertilizer should be applied according to recommendations based on soil tests.
- Using low-pressure ground equipment helps to minimize surface slippage resulting from excessive sandiness.

Pasture and hayland

Suitability: Well suited

Management concerns: Droughtiness, leaching of nutrients, and erosion

Management measures and considerations:

- Controlled grazing, sod management, and weed control help to maintain quality forage.
- Intensive grazing practices maximize forage utilization and improve forage quality.
- Planting on the contour when renovating pastures and hay fields helps to reduce the hazard of erosion and increase germination.
- Lime and fertilizer should be applied according to recommendations based on soil tests.

Woodland

Suitability: Moderately suited

Productivity class: Moderate

Management concerns: Equipment limitations and seedling survival

Management measures and considerations:

- Using tracked or low-pressure ground equipment for harvesting helps to prevent rutting.
- Planting seedlings during wet and cool periods helps to reduce seedling mortality rates.
- Tree varieties that are drought tolerant should be selected for planting.

Urban development

Suitability: Moderately suited

Management concerns: Rapid permeability and droughtiness

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Because of the droughtiness and clayey surface textures, irrigation, use of drought-tolerant plant species,

and additions of topsoil or organic matter may be needed in establishing lawns.

Interpretive Groups

Land capability classification: Wakulla—III_s; Candor—IV_s

Woodland ordination symbol: Based on longleaf pine as the indicator species, 5S in areas of the Wakulla soil and 4S in areas of the Candor soil

WuB—Wakulla-Candor-Urban land complex, 0 to 10 percent slopes

Setting

Landform: Uplands of the Sandhills

Landscape position: Broad ridges and side slopes

Shape of areas: Broad and irregular

Size of areas: 10 to 1,000 acres

Composition

Wakulla soil and similar inclusions: 40 percent

Candor soil and similar inclusions: 25 percent

Urban land: 25 percent

Contrasting inclusions: 10 percent

Typical Profile

Wakulla

Surface layer:

0 to 3 inches—brown sand

Subsurface layer:

3 to 26 inches—brownish yellow sand

Subsoil:

26 to 39 inches—yellowish brown loamy sand

Underlying material:

39 to 53 inches—brownish yellow sand

53 to 70 inches—yellow sand that has brown mottles

70 to 85 inches—very pale brown sand that has brown mottles

Candor

Surface layer:

0 to 3 inches—grayish brown sand

Subsurface layer:

3 to 23 inches—light yellowish brown sand

Subsoil:

23 to 35 inches—yellowish brown loamy sand

35 to 54 inches—yellowish brown sand

54 to 62 inches—brownish yellow sand

62 to 68 inches—strong brown sandy loam that has yellow and red mottles

68 to 80 inches—yellowish red sandy clay loam that has yellow mottles

Urban land

Urban land consists of areas where 25 percent of the surface is covered by concrete, asphalt, buildings, or other impervious materials.

Soil Properties and Qualities

Wakulla and Candor

Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Wakulla—rapid; Candor—rapid to moderate

Available water capacity: Low

Depth to high water table: Greater than 6 feet

Flooding: None

Shrink-swell potential: Low

Hazard of soil blowing: Severe

Hazard of water erosion: Slight

Slope class: Nearly level to strongly sloping

Depth to bedrock: Greater than 60 inches

Inclusions

Contrasting inclusions:

- The well drained Ailey soils that have a loamy subsoil and are on the more sloping parts of the landscape
- Soils that have a surface layer more than 40 inches thick and occur in random areas throughout the landscape
- Somewhat poorly drained soils in depressional areas

Similar inclusions:

- Soils that are sand throughout
- Soils that have two separate loamy subsoils

Use and Management

Major Uses: Shopping centers, parking lots, roads, industrial areas, recreational areas, and dwellings

Cropland

Suitability:

- This map unit is not used for cropland.

Pasture and hayland

Suitability:

- This map unit is not used for pasture or hayland.

Woodland

Suitability:

- This map unit is not used for woodland.

Urban development

Suitability: Moderately suited

Management concerns: Rapid permeability and droughtiness

Management measures and considerations:

- The County Health Department should be contacted for guidance in developing sanitary facilities.
- Because of the droughtiness and clayey surface textures, irrigation, use of drought-tolerant plant species, and additions of topsoil or organic matter may be needed in establishing lawns.

Interpretive Groups

Land capability classification: Wakulla—IIIs; Candor—IVs; Urban land—VIIIs

Woodland ordination symbol: None assigned

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Generally, the soils in Richmond County that are well suited to crops are also well suited to urban uses. The data concerning specific soils in the county can be used in planning future land use patterns. The potential for farming should be considered relative to any soil limitations and the potential for nonfarm development.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Walter B. High, district conservationist, and Bobby G. Brock, conservation agronomist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified, the system of land capability classification used by the Natural Resources Conservation Service is explained, the estimated yields of the main crops and hay and pasture plants are listed for each soil, and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units" and in the tables. Specific information can be obtained from the local office of the Natural Resources Conservation Service or the North Carolina Cooperative Extension Service.

Federal and State regulations require that any area designated as wetlands cannot be altered without prior approval. Contact the local office of the Natural Resources Conservation Service for identification of hydric soils and potential wetlands.

In Richmond County, average farm size is increasing while the total number of farms is decreasing. Because some farmland has been left idle, converted to nonagricultural uses, or set aside in such government programs as the Conservation Reserve Program, the total acreage of cropland in the county has declined in recent years. This trend has been particularly evident in the Sandhills region of the county.

In 1993, more than 22,000 acres in Richmond County were used for crops, pasture, or hayland (9). Harvested cropland made up approximately 15,300 acres, and pasture and hayland made up approximately 6,700 acres. Because the survey area has many suitable soils and a favorable climate, the county could produce many field crops that are not commonly grown. In 1993, about 12,800,000 chickens, 580,000 turkeys, 14,000 hogs, and 2,700 cattle were produced in the county (9).

Cropland in Richmond County consists of row crops, small grains, vegetable crops, and fruit crops. The most

common row crops are soybeans, corn, and tobacco. Wheat is the most common small grain. A small acreage of oats is also grown. Vegetable crop production is increasing in the county. Although vegetable crops require intensive management, the potential profit from vegetable crops is high compared to that from conventional row crops on a comparable acreage. The most common vegetable crops are squash, peppers, cucumbers, sweet corn, sweet potatoes, watermelons, snapbeans, cabbage, and cantaloupe. Peaches are the only tree fruit produced commercially. The pasture and hayland in the county are planted to hybrid bermudagrasses and tall fescue.

Suitability of soils for agricultural purposes varies from well suited to unsuited in Richmond County. Slopes range from nearly level to steep and thus have a major affect on agricultural suitability. The soils in the survey area range from soils that are high in clay content to soils that are droughty and sandy. The soils that are high in clay content are common in the Mangum area and in other areas adjacent to the Pee Dee River. The droughty, sandy soils occur throughout the eastern two-thirds of the county in the Sandhills. A few soils may be subject to flooding during the growing season, which can destroy crops. Some soils contain rock fragments that interfere with cultivation. Other soils have a wetness problem that reduces their suitability for agriculture.

Some areas that are idle, wooded, or pastured have good potential for use as cropland. Food production could be increased considerably by applying the latest technology to all of the cropland in the survey area. The information in this soil survey can facilitate the application of such technology.

Cropland

Management considerations for cropland in the county include controlling erosion, installing an irrigation system, installing a drainage system, improving soil fertility, applying a system of chemical weed control, and improving tilth.

Control of water erosion.—Water erosion is a major concern on about one-half of the cropland in the county. It is a hazard on soils that have slopes of more than 2 percent, except where the soils have a thick, sandy surface layer. It is a problem on the sandier soils that have slopes of more than about 5 percent. The hazard of water erosion increases as the steepness of slope or length of slope increases. Fields that dominantly have slopes of more than 15 percent should not be used for row crops. They should be converted to permanent vegetation and removed from row crop production because of a severe or very severe hazard of erosion.

Water erosion directly reduces crop yields. It increases the costs of producing crops and damages the soil and the environment. Erosion results in the loss of pesticides,

plant nutrients, organic matter, and valuable topsoil and lowers the rate of water infiltration. Increased amounts of runoff from eroded soils contributes to downstream flooding. The sediment and chemical pollutants washed into streams, lakes, and reservoirs greatly reduce water quality. Controlling erosion is essential because it maintains soil productivity, protects the soil, and improves water quality for municipal use, for recreation, and for fish and wildlife.

Loss of the original topsoil and organic matter is especially damaging on soils that have a clayey subsoil, such as Badin and Uwharrie soils. After most of the original, loamy surface layer has eroded away, the plow layer becomes a mixture of the firm, clayey, less fertile subsoil and a small amount of original topsoil. Soil tilth becomes poor, and surface crusting is a problem. Surface crusting creates seedling emergence problems and increases the amount of surface water runoff because it reduces the infiltration rate. Cultivating or preparing a seedbed on eroded, clayey soils is difficult.

Soils that are shallow or moderately deep to bedrock are also easily damaged by water erosion, which reduces the depth of the root zone. Depth of the root zone is a concern for such soils as Badin and Goldston soils.

Erosion-control practices provide a protective surface cover, help to control runoff, and increase the rate of water infiltration. The practices can include a plant cover, a certain erosion-control structure, or a combination of both. A permanent plant cover limits the amount of soil lost through erosion and thus maintains soil productivity. In sloping areas, including forage crops of grasses and legumes in the cropping system helps to control erosion. The forage crops also add nitrogen to the soil and improve tilth. Erosion-control structures are built to control the flow of water over the land. They include terraces, diversions, and grassed waterways.

Cover crops are planted to protect the soil from erosion during periods when a crop is not being grown. Minimizing tillage and leaving crop residue on the surface increase the rate of water infiltration and reduce the hazards of runoff and erosion. These practices can be effective on nearly all of the soils in the survey area. In the more sloping areas that are used for corn or double cropped with soybeans, no-till farming is effective in controlling erosion.

Terraces and diversions reduce erosion by intercepting excess amounts of surface water runoff and safely conveying the water to suitable, protected outlets, such as grassed waterways, field borders, and filter strips. They also reduce the length of slopes. Grassed waterways, which are commonly planted in tall fescue, bermudagrass, or bahiagrass, protect natural drainageways and provide a safe and protected route for runoff (fig. 4). These erosion-control practices are most effective on very deep, well



Figure 4.—This grassed waterway, in an area of McQueen loam, 1 to 6 percent slopes, is an effective method of controlling erosion on gently sloping landscapes.

drained soils that have regular slopes. They are less effective on soils that have a clayey subsoil, which may be exposed in the terrace channels, or that have bedrock within a depth of 40 inches.

Contour farming and contour stripcropping help to control erosion on many of the soils in the survey area. They are best suited to soils that have smooth, uniform slopes. Filter strips and field borders are narrow strips consisting of erosion-control vegetation or wildlife plantings that are in and along the edge of fields. They intercept runoff laden with sediment, reduce runoff velocity, and filter out sediment and chemicals that may be attached to soil particles.

Information about erosion-control measures for each kind of soil is available at the local office of the Natural Resources Conservation Service.

Control of soil blowing.—Soil blowing is a management concern on about one-half of the cropland in the county. It

affects soils that have a sandy surface layer, especially where they occur in large open fields. Soils of the Sandhills, such as Ailey, Wakulla, and Candor soils, are particularly susceptible to soil blowing. Soil blowing can result in soil loss, cause abrasive damage to young, tender plants, and reduce soil temperature. Blowing sand may be a traffic hazard because it can reduce visibility. It is especially a concern in spring where large, bare agricultural fields are exposed to strong winds. In Richmond County, many tons of topsoil are lost in this way each year. In addition, deposits of blown sand can clog drainage and road ditches.

Soil blowing can be controlled by using vegetative conservation measures. Conservation cropping systems that include proper conservation practices provide a surface cover that protects the soil from the wind. Recommended conservation practices include cover crops, common stripcropping, wind stripcropping, crop

residue management, conservation tillage, animal waste management, and windbreaks.

Cover crops protect the surface from wind, increase infiltration rates, add organic matter to the soil, and conserve soil moisture. Legumes used as cover crops also are beneficial because they add nitrogen to the soil for future crops.

In stripcropping, different crops are planted in strips so that large fields are divided into smaller ones and the hazard of soil blowing is reduced. Wind stripcropping is regularly used in vegetable crop production on soils that have a sandy topsoil, such as Ailey, Wakulla, and Candor soils. In wind stripcropping, narrow strips of small grain, the width of a normal row, are left between spaces 5 to 12 feet wide across a field. These strips help to minimize soil blowing and prevent damage to young crops.

Crop residue management helps to control soil blowing by leaving residue from the previous crop on the soil surface. It is most commonly practiced in combination with conservation tillage. This combination provides the best results. Conservation tillage maintains a surface cover because the soil is tilled little or not at all. The no-till planting of soybeans in wheat stubble is an example of conservation tillage.

Substantial quantities of poultry waste, poultry litter, and deadbird compost are generated in Richmond County each year. These animal wastes can be used as fertilizer material and sources of organic matter to build up the topsoil and help produce a good vegetative cover.

A windbreak is a strip of permanent vegetation that is tall enough to shield crops from the wind and slow wind velocity. Effective windbreaks are generally oriented perpendicular to the prevailing wind direction. A list of recommended plants for this practice can be obtained at the local office of the Natural Resources Conservation Service or the North Carolina Cooperative Extension Service.

Irrigation.—About one-half of the cropland in Richmond County is on sandy Ailey, Candor, and Wakulla soils in the Sandhills. These droughty soils require irrigation to produce profitable yields of crops (fig. 5). A high percentage of the tobacco, small grain, and vegetable crops and all of the peaches are grown on these droughty, sandy soils. Conservation cropping systems that include cover crops, conservation tillage, crop residue management, and crop rotations utilizing grasses and legumes help to maintain soil moisture and return organic matter to the soil. Increasing organic matter content improves the water-holding capacity of the soil. These conservation practices, combined with irrigation, can reduce droughtiness. Sprinkler irrigation is the dominant method used in the county to provide supplemental water to crops during the growing season. Additional information

about irrigation can be obtained from the local office of the North Carolina Cooperative Extension Service or the Natural Resources Conservation Service.

Drainage.—Wetness is a management concern on a few of the soils in Richmond County that are used for crops or pasture. These soils include Chewacla, Creedmoor, Hornsboro, Johnston, Paxville, Peawick, Pelion, and Riverview soils. The wetness problem consists of a high water table, flooding, or both. The potential success of overcoming this problem varies, depending on the permeability of the soil, the availability of drainage outlets, and the practicality of preventing flooding.

The very poorly drained Johnston and Paxville soils are hydric soils. Undrained, noncropland areas of these soils are commonly in natural wetlands. Artificial drainage of these areas is subject to regulations concerning wetlands and may require special permits and extra planning. Recommendations given in this section for drainage systems in areas of these soils pertain only to those areas that are currently used as cropland.

A well-designed system for the removal of surface water in conjunction with an effective subsurface drainage system and with the timely planting and harvesting of crops helps to reduce wetness problems affecting cropland. Soil properties that affect the movement of water in soil should be considered in designing drainage systems. Additional information about the use and design of drainage systems for soils that have wetness problems is available at the local office of the Natural Resources Conservation Service.

Because such soils as Creedmoor, Hornsboro, Pelion, and Peawick soils have a slowly permeable or very slowly permeable subsoil, they respond poorly to subsurface drainage systems. A good system for the removal of surface water helps, but wetness still interferes with management activities during wet periods. Chewacla and Johnston soils have a high water table. They respond well to subsurface drainage systems if suitable outlets are available, but outlets are generally poor. Although Paxville soils respond well to subsurface drainage systems, wetness remains a problem during wet periods because these soils are very poorly drained.

Flooding is a problem on Chewacla, Johnston, and Riverview soils. The prevention of flooding is generally not practical. Surface drainage systems are used to hasten the removal of floodwaters.

Managing drainage in conformance with regulations concerning wetlands may require special permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.

Soil fertility.—The soils in Richmond County generally



Figure 5.—Irrigation of flue-cured tobacco on the droughty Wakulla and Candor soils, 0 to 8 percent slopes.

are low in natural fertility and are naturally acid. Additions of lime and fertilizer are needed for the production of most kinds of crops.

Liming requirements are a major concern on cropland. The acidity level in the soil affects the availability of many nutrients to plants and the activity of beneficial bacteria. Lime neutralizes exchangeable aluminum in the soil and thus counteracts the adverse effects of high levels of aluminum on many crops. Liming adds calcium (from calcitic lime) or calcium and magnesium (from dolomitic lime) to the soil.

A soil test is a guide to what amount and kind of lime should be used. The desired pH levels may differ, .

depending on the soil properties and the crop to be grown.

Nitrogen fertilizer is required for most crops. It is generally not required, however, for clover, in some rotations of soybeans, and for alfalfa that is established. A reliable soil test is not available for predicting nitrogen requirements. Appropriate rates of nitrogen application are described in the section "Yields per Acre."

Soil tests can indicate the need for phosphorus and potassium fertilizer. Phosphorus and potassium tend to build up in the soil.

Substantial quantities of poultry waste, poultry litter, and deadbird compost are generated in Richmond County

each year. These animal wastes can be used as fertilizer material and sources of organic matter to build up the topsoil and help produce a good vegetative cover.

Chemical weed control.—The use of herbicides for weed control is a common practice on the cropland in Richmond County. It decreases the need for tillage and is an integral part of modern farming. Selected soil properties, such as organic matter content and texture of the surface layer, affect the rate of herbicide application. Estimates of both of these properties were determined for the soils in this survey area. Table 15 shows a general range of organic matter content in the surface layer of the soils. The texture of the surface layer is shown in the USDA texture column in table 14.

In some areas the organic matter content projected for the different soils is outside the range shown in the table. The content can be higher in soils that have received large amounts of animal or manmade waste. Soils that have recently been brought into cultivation may have a higher content of organic matter in the surface layer than similar soils that have been cultivated for a long time. Conservation tillage can increase the content of organic matter in the surface layer. A lower content of organic matter is common where the surface layer has been partly or completely removed by erosion or land smoothing. Current soil tests should be used for specific organic matter determinations.

Tilth.—Soil tilth is the physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration. Seed germination and the infiltration of water into the soil are highly influenced by tilth. Soils that have good tilth have a granular and porous surface layer.

Many of the soils in the survey area that are used for crops have a light-colored, loamy surface layer that has a low content of organic matter. Generally, the structure of these soils is weak. Periods of heavy rainfall result in the formation of a crust on the surface. The crust is hard when dry and nearly impervious to water. It reduces the rate of water infiltration and increases the runoff rate. Regular additions of crop residue, manure, and other organic material can improve soil structure and prevent the formation of a crust.

Because of crusting during winter and spring, fall plowing is generally not recommended for soils that have a light-colored, loamy surface layer. Many of the soils that are plowed in fall are almost as dense and hard at planting time as they were before they were plowed. About one-half of the cropland in the survey area consists of soils that are subject to crusting and subsequent erosion if they are plowed in fall.

Eroded soils that have a clayey subsoil, such as Badin, Davidson, Exway, Faceville, Mayodan, and Uwharrie

soils, become cloddy if they are plowed outside a narrow range in moisture content.

Some soils in the survey area have poor tilth because of gravel or channers in the surface layer. These soils include Ailey, Badin, Goldston, and Pacolet soils. The content and size of the rock fragments affect the use of tillage implements.

Stones and boulders are on the surface of a few soils in the survey area. Areas of Enon, Mayodan, Pinkston, and Wynott soils have large surface rocks that make them unsuitable for cropland.

Pasture and Hayland

In 1993, Richmond County had more than 2,700 beef and dairy cattle (9). Nearly all of the pasture and hayland in the county supports grasses. A small amount of legumes is grown. About one-third of the hay is grown in rotation with pasture. Most of the harvested hay is rolled into large, round bales or is used as grass silage.

Selection of forage species.—A successful livestock enterprise depends on a forage program that provides large quantities of good-quality feed. The soils in the survey area vary widely in their ability to produce grasses and legumes because of differences in such properties as depth to bedrock or to other limiting layers, internal drainage, and available water capacity. The forage species selected for planting should be appropriate for the soil.

Most of the acreage of pasture and hayland in Richmond County is planted to hybrid bermudagrass, alfalfa, tall fescue, or coastal bermudagrass. Most areas of hybrid bermudagrass are used as hayland. They are predominantly on soils that have a sandy surface layer, such as Ailey, Candor, and Wakulla soils (fig. 6).

Recommendations based on soil tests should be used for the initial establishment of hybrid bermudagrass. Maintaining levels of nitrogen, phosphorous, and potassium is essential for long-term production. The application of nitrogen is a special concern because each cutting of hay removes significant amounts of nitrogen from the soil. Nutrient management of nitrogen and other elements may be critical, especially in older stands. In addition, trace elements may eventually become limited in the older stands.

Tall fescue is the predominant grass used for pastures in the Piedmont region of the county. Mayodan, Creedmoor, Uwharrie, and Badin soils are the dominant soils used as pasture. Recommendations based on soil tests should be used for the establishment of tall fescue or fescue-clover pastures. After the pasture is established, continued applications of lime may be needed every 3 to 5 years, depending on soil-test recommendations. Because most of the growth of tall



Figure 6.—Cattle grazing on coastal bermudagrass in an area of Wakulla and Candor soils, 0 to 8 percent slopes. When properly managed, Wakulla and Candor soils can provide excellent pasture and hayland.

fescue occurs in spring and fall, fertilizer recommendations usually suggest split applications of nitrogen, once in February and once in September. Fescue is semidormant during the hot, dry summer months and should not be grazed shorter than 3 inches. Livestock may need to be moved to other pastures, or their grazing may need to be supplemented with hay.

Alfalfa is steadily becoming an important hay crop in the county. Because alfalfa is not tolerant of drought or droughty soil conditions, it should be established on the best suited soils, typically Turbeville, Uwharrie, Orangeburg, and Mayodan soils. Other soils that are

suited but are less productive are Creedmoor and Badin soils. Available water supplies and proper management are critical in maintaining good stands of alfalfa. Irrigation can increase yields of alfalfa in most years on any of the suited soils. Intensive management is required to protect alfalfa from damage by insects or diseases and to help ensure optimum yields.

The very deep, well drained Mayodan, Turbeville, and Uwharrie soils are suited to all of the major grasses and legumes grown in the survey area. Fescue, ladino clover, and coastal bermudagrass can produce from 6 to 9 animal unit months of grazing per acre each year on

these soils. Hybrid bermudagrass and switchgrass can produce an average of 10 animal unit months of grazing per acre each year on these soils. An animal unit month is the amount of feed or forage required by an animal unit for 1 month.

A well-rounded management program for pasture and hayland typically includes both warm-season and cool-season grasses and grass-legume mixtures, where practical. Intensive grazing is the timely rotation of livestock in small, highly managed pastures. It requires a high degree of total pasture management but can produce pasture grazing from March through November. It can provide alfalfa, sericea lespedeza, red clover, orchardgrass, and hybrid bermudagrass during winter for hay. These management combinations can provide a successful pasture and hayland program for livestock producers. The use of perennials in forage programs is generally preferred because of the lower production costs and a reduced hazard of erosion resulting from the year-round ground cover.

Maintenance of pasture and hayland.—Renovation can increase forage yields in areas that have a good stand of grass. It includes partially destroying the sod, applying lime and fertilizer, and seeding desirable forage species. Adding legumes to the stand of grass, where the soil is adapted to the legume, provides high-quality feed. Legumes increase summer production and transfer nitrogen from the air into the soil. Under growing conditions, alfalfa can fix 200 to 300 pounds of nitrogen per acre per year, red clover can fix 100 to 200 pounds, and ladino clover can fix 100 to 150 pounds.

Additional information about managing pasture and hayland can be obtained from the local office of the Natural Resources Conservation Service or the North Carolina Cooperative Extension Service.

Orchards

In Richmond County, orchards produce Wimblo, Red Haven, Derby, Georgia Belle, Harvester, Norman, and other varieties of peaches. Nearly all of the fruit is grown for the fresh market. All varieties require intensive management and high maintenance. In 1991, according to the North Carolina Department of Agriculture, Agricultural Statistics Division, the county had about 280 acres of orchards.

Site selection.—A uniform and sloping topography allows for good air drainage. Sites that are gullied or have ravines or abrupt changes in slope should not be selected. Trees planted in soils that are wet, subject to flooding, affected by seeps, or in natural drainageways produce low yields and are more susceptible to disease. Orchards should be established near an adequate supply of water, which can be used for spraying or irrigation. Good sites are in areas of very deep, well drained or

somewhat excessively drained soils. In Richmond County, peach orchards are mainly in the Sandhills region, on such soils as Candor and Wakulla soils (fig. 7).

Layout and erosion control.—The layout of an orchard should include safe outlets for water flowing into the orchard from higher areas and for water flowing out of the orchard. Field borders and diversions that empty into grassed waterways dispose of water without causing erosion. Sod should be used between rows of trees and on all roads and erosion-control structures. It should be established as soon as possible after construction. Rows of trees should be planted on the contour and as nearly parallel to each other as possible. This arrangement helps to control erosion and allows easy access. Access roads are very important. Short or dead-end roads, which make access with equipment difficult, and roads with sharp turns or grades above 10 percent should not be constructed. Wet areas or natural drainageways should be avoided as sites for roads. If these areas are unavoidable, water bars and culverts should be installed.

Lime, fertilizer, and herbicides.—The sandy soils in Richmond County have insufficient natural fertility to sustain orchards. They are too acid and are typically low in nitrogen, phosphorus, and potassium. Application rates for lime and fertilizer should be determined by tissue analysis of the trees and by soil analysis. Lime and fertilizer should also be applied to access roads and erosion-control structures to maintain the sod.

The content of organic matter, the texture of the surface layer, and the depth to a water table affect the amount of herbicide used and the frequency of application. Most soils of the Sandhills do not typically have enough organic matter or clay in the surface layer to inhibit the activity of herbicides. Because soils that have a high water table are not used for orchards in Richmond County, wetness is not a factor in herbicide use. Some soils in the county that are not commonly used for orchards have higher amounts of organic matter or clay or have seasonal wetness. These soil limitations are described under the heading "Detailed Soil Map Units."

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the



Figure 7.—A peach orchard on Wakulla and Candor soils, 0 to 8 percent slopes. Peaches are the main fruit crop in Richmond County.

crop. Management can include drainage, erosion control, irrigation, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

A high level of management includes maintaining proper soil reaction and fertility levels as indicated by standard soil tests. The application rate of nitrogen for corn on soils that have a yield potential of 125 to 150

bushels per acre should be 140 to 160 pounds per acre. If the yield potential for corn is 100 bushels per acre or less, a rate of 100 to 120 pounds of nitrogen per acre should be used. The application of nitrogen in excess of that required for potential yields generally is not recommended. The excess nitrogen fertilizer that is not utilized by the crop is an unnecessary expense and causes a hazard of water pollution. If corn or cotton is grown after the harvest of soybeans or peanuts, nitrogen rates can be reduced by about 20 to 30 pounds per acre. Because nitrogen can be readily leached from sandy soils, split applications may be needed on these soils during the growing season.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the North Carolina Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland (14). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The capability classification of each map unit component is given in the section "Detailed Soil Map Units" and in table 5.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. Generally, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable content of salts and sodium, and few or no rocks. It is permeable to water and air. It is not

excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 8 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 52,095 acres in the survey area, or nearly 17 percent of the total acreage, meets the soil requirements for prime farmland. Nearly all of the prime farmland is located in the western third of the county, mainly in the Turbeville-Norfolk-Orangeburg, Uwharrie-Badin, Mayodan-Creedmoor, and Peawick-Hornsboro general soil map units. These map units are described under the heading "General Soil Map Units." About 7,000 acres of this prime farmland is used for crops. The crops grown on this land account for a very significant part of the county's total agricultural income each year.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 6. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures used to overcome a hazard or limitation, such as flooding or wetness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Woodland Management and Productivity

Albert Coffey, forester, Natural Resources Conservation Service, helped prepare this section.

Owners of woodland in Richmond County have many objectives. These objectives include producing timber; conserving wildlife, soil, and water; preserving esthetic values; and providing opportunities for recreational activities, such as commercial hunting. Public demand for clean water and recreational areas creates pressures and opportunities for owners of woodland.

For purposes of forest inventory, the predominant forest types identified in Richmond County are as described in the following paragraphs (12).

Longleaf pine. This forest type covers 32,126 acres. It

is predominantly longleaf pine (fig. 8). Commonly included trees are oak, hickory, and gum.

Loblolly-shortleaf. This forest type covers 89,342 acres. It is predominantly loblolly pine, shortleaf pine, or other kinds of southern yellow pine (excluding longleaf pine) or a combination of these species. Commonly included trees are oak, hickory, and gum.

Oak-pine. This forest type covers 38,797 acres. It is predominantly hardwoods, usually upland oaks. Pine species make up 25 to 50 percent of the stand. Commonly included trees are gum, hickory, and yellow-poplar.

Oak-hickory. This forest type covers 64,389 acres. It is predominantly upland oaks or hickory, or both. Commonly included trees are yellow-poplar, elm, maple, and black walnut.

Oak-gum-cypress. This forest type covers 12,699 acres. It is bottom-land forest consisting predominantly of tupelo, blackgum, sweetgum, oaks, southern cypress, or a combination of these species. Commonly included trees are cottonwood, willow, ash, elm, hackberry, and maple.

Intensively managing forest land involves techniques that resemble those practiced in agriculture, such as weeding, bedding, thinning the stand, planting genetically improved varieties, and applying pesticides. Extensively managing forest land involves techniques that resemble natural processes, such as natural regeneration and the use of prescribed burning. In the extensively managed forest, emphasis is placed on diversity rather than maximum wood production. These diverse management plans require a variety of silvicultural practices.

Because of the increasing popularity of landscaping in urban areas, pine straw has become a highly marketable commodity. Forest landowners are now interested in management techniques that can increase the production of pine straw. Although all species of pine needles are sold, longleaf pine needles are the most desirable because of their length and color.

The very deep, sandy soils of Richmond County are ideally suited for the production of longleaf pine straw. The pine straw market can now provide a steady, long-term income for forest landowners and be an incentive for landowners to more closely manage their woodland.

Commercial forests cover about 237,353 acres, or about 78 percent of the land area of Richmond County (12). Commercial forest is land that is producing or is capable of producing crops of industrial wood and that has not been withdrawn from timber production. Loblolly pine is the most important timber species in the county because it grows fast, is adapted to the soil and climate, brings the highest average sale value per acre, and is easy to establish and manage.

One of the first steps in planning intensive woodland management is to determine the potential productivity of



Figure 8.—A stand of longleaf pine on Wakulla and Candor soils, 0 to 8 percent slopes. Longleaf pine is used for the production of timber and pine needle straw.

the soil for several alternative tree species. The most productive and valued trees are then selected for each soil type. Site and yield information enables a forest manager to estimate future wood supplies. These estimates are the basis of realistic decisions concerning

expenses and profits associated with intensive woodland management, land acquisition, or industrial investments.

The potential productivity of woodland depends on physiography, soil properties, climate, and the effects of past management. Specific soil properties and site

characteristics, including soil depth, texture, structure, and depth to the water table, affect forest productivity primarily by influencing available water capacity, aeration, and root development. The net effects of the interaction of these soil properties and site characteristics determine the potential site productivity.

A knowledge of soils helps to provide a basic understanding of the distribution and growth of tree species on the landscape. Landscape position, soil depth, and availability of water largely determine which tree species grow on a particular soil. For example, red maple, sweetgum, and yellow-poplar grow well on very deep soils that have a high moisture content and occur in low landscape positions. Scarlet oak, red oak, and pine grow well in the Piedmont uplands on moderately deep to very deep soils that have a moderate moisture content. Longleaf pine and turkey oak commonly grow in the Sandhills on very deep soils that have a low moisture content.

Soil serves as a reservoir for moisture, provides an anchor for roots, and supplies most of the available nutrients. These three qualities are directly or indirectly affected by organic matter content, reaction, fertility, drainage, texture, structure, depth, and landscape position.

The ability of a soil to serve as a reservoir for moisture, as measured by the available water capacity, is primarily influenced by texture, organic matter content, rooting depth, and content of rock fragments. Because of the fairly even and abundant summer rainfall in the survey area, available water capacity is a limitation affecting tree growth only on shallow soils, such as Goldston soils, and on very deep, droughty soils of the Sandhills, such as Candor and Wakulla soils.

All of the soils in the survey area, except for the shallowest, provide an adequate anchor for tree roots. The susceptibility to windthrow, or the uprooting of trees by the wind, is not a major management concern on most soils.

The available supply of nutrients for tree growth is affected by several soil properties. Mineral horizons in the soil are important. Mineralization of humus releases nitrogen and other nutrients to plants. Calcium, magnesium, and potassium are held within the humus. Very small amounts of these nutrients are made available by the weathering of clay and silt particles. Most of the soils in the uplands have been leached and contain only small amounts of nutrients below the surface layer. Soils that have a thin surface layer require careful management during site preparation to ensure that the surface layer is not removed or degraded. Examples are Uwharrie and Mayodan soils.

The living plant community is part of the nutrient reservoir. The decomposition of leaves, stems, and other

organic material recycles the nutrients that have accumulated in the forest ecosystem. Fire, excessive trampling by livestock, and erosion can result in the loss of these nutrients. Woodland management should include prevention of wildfires and protection from overgrazing.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 7 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of the major soil limitations to be considered in management.

Table 7 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare per year. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of the slope. The letter *X* indicates that a soil has restrictions because of stones or rocks on the surface. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *T* indicates a soil that has, within the root zone, excessive alkalinity or acidity, sodium salts, or other toxic substances that limit the development of desirable trees. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by bedrock, a hardpan, or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *F* indicates a soil that has a high content of coarse fragments. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: *R*, *X*, *W*, *T*, *D*, *C*, *S*, and *F*.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion-control measures are

needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, or the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, and susceptibility of the surface layer to compaction. As slope gradient and length increase, the use of wheeled equipment becomes more difficult. On the steeper slopes, tracked equipment is needed. On the steepest slopes, even tracked equipment cannot be operated and more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment use for more than 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize soil compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of the naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a high water table and the length of the period when the water table is high, rock fragments in the surface layer, rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings.

Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *windthrow hazard* indicate the likelihood that trees will be uprooted by the wind. A restricted rooting depth is the main reason for windthrow. The rooting depth can be restricted by a high water table, a fragipan, or bedrock or by a combination of such factors as soil wetness, texture, structure, and depth. The risk is *slight* if strong winds break trees but do not uproot them; *moderate* if strong winds blow a few trees over and break many trees; and *severe* if moderate or strong winds commonly blow trees over. Ratings of moderate or severe indicate that care is needed in thinning or that the stand should not be thinned at all. Special equipment may be needed to prevent damage to shallow root systems in partial cutting operations. A plan for the periodic removal of windthrown trees and the maintenance of a road and trail system may be needed.

The *potential productivity of common trees* on a soil is expressed as a *site index* and a *volume* number. The predominant common trees are listed in table 7 in the order of their observed occurrence. Additional species that commonly occur on the soils may be listed in the detailed soil map unit descriptions. Generally, only two or three tree species dominate. The first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

For soils that are commonly used for timber production, the yield is predicted in cubic feet per acre per year. It is predicted at the point where mean annual increment culminates. The estimates of the productivity of the soils in this survey are based mainly on loblolly pine and longleaf pine (6, 11). Productivity is also based on site index data from sweetgum and yellow-poplar (3, 4).

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years (50 years in this survey). This index applies to fully stocked, even-aged, unmanaged stands. Productivity of a site can be improved through management practices, such as bedding, ditching, managing water, applying fertilizer, and planting genetically improved species.

The *volume* is the yield likely to be produced by the most important trees, expressed in cubic feet per acre per year.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Recreation

Richmond County offers a variety of recreational opportunities and has the potential to expand these opportunities. The Richmond County Parks and Recreation Department has parks in both Rockingham and Hamlet, and almost all of the incorporated towns in the county have recreational ball fields. The larger parks are available for such activities as football, soccer, baseball, softball, tennis, basketball, and swimming and provide picnic facilities. The city recreational leagues sponsor organized sporting events in basketball, softball, and volleyball. Opportunities for youths include a 4-H camp and a Girl Scout camp. The county has two golf courses and a public driving range.

Richmond County offers excellent opportunities for hunting and fishing. Excellent hunting is available in the Pee Dee National Wildlife Refuge on a limited basis. The North Carolina Sandhills Gamelands are also available to the public. They have more than 30,000 acres of land for hunting, camping, and horseback riding and several small lakes and ponds for fishing. The North Carolina Field Trial Competitions for bird dogs also take place on these gamelands.

Blewett Falls Lake, Ledbetter Lake, and the Pee Dee River provide opportunities for various water sports. The Wildlife Commission maintains two wildlife landings for access to Blewett Falls Lake and to the Pee Dee River. The main recreational activity on the lakes and river is fishing. Other activities include waterskiing and canoeing.

Richmond County has two recreational facilities for auto racing. The Rockingham Motor Speedway hosts NASCAR events in March and October and various motorcycle events throughout the year. The Rockingham Drag Strip hosts events several times each year. Other points of interest in the county are the Railroad Museum in Hamlet and the Museum of Natural History in Ellerbe.

The soils of the survey area are rated in table 8 according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the period of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. Two golf courses have been built in the Sandhills region of the survey area, where soils are sandy and have a droughtiness problem. Because of the gently sloping topography and ease of construction and landscaping,



Figure 9.—A golf course on Ailey loamy sand, 0 to 8 percent slopes, and Wakulla and Candor soils, 0 to 8 percent slopes. Gently sloping areas of Ailey, Wakulla, and Candor soils are well suited to the design and construction of golf courses.

however, such soils as Ailey, Wakulla, and Candor soils are desirable for use as golf courses (fig. 9). The droughtiness limitation can be overcome by irrigation. Leaching of nutrients is also a problem. This problem can be overcome by using split applications of fertilizer. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

John P. Edwards, biologist, Natural Resources Conservation Service, and Terry Sharp, district biologist, North Carolina Wildlife Resources Commission, helped prepare this section.

Wildlife habitat in Richmond County is diverse and is particularly suited to such species as rabbits, quail,

squirrel, dove, deer, and turkey. Soils in the county also are diverse and generally support native and agricultural crops that provide good food and cover for these wildlife species.

Populations of waterfowl are mostly in areas along the Pee Dee River. Beaver ponds, which are common in areas of Chewacla and Johnston soils, also provide good habitat for waterfowl.

Plant and animal species that are classified as threatened or endangered or are of special concern are primarily associated with Wakulla, Candor, and Ailey soils. Johnston soils on the flood plains commonly support plant species that are of special concern in North Carolina.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the

construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat. The ratings in table 9 are intended to be used as a guide and are not site specific. Onsite investigation is needed for individual management plans.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil

properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, partridge pea, and pokeberry.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, yellow-poplar, black cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, slope, and surface stoniness. Examples of wetland plants are smartweed, cattail, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are waterfowl feeding areas and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, thrushes, woodpeckers, squirrels, gray fox, raccoon, white-tailed deer, and opossum.

Habitat for wetland wildlife consists of open, marshy or

swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, muskrat, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and aerobic sewage

lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock or a very firm, dense layer, stone content, soil texture, and slope. The time of the year that excavations can be made is affected by the depth to a high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock, large stones, and flooding affect the ease of excavation and construction.

Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established. Soil tests are essential to determine liming and fertilizer needs. Help in making soil tests or in deciding what soil additive, if any, should be used can be obtained from the office of the Richmond Soil and Water Conservation District or the North Carolina Cooperative Extension Service.

Sanitary Facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are

unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness. The Richmond County Health Department can provide detailed information and guidance for compliance with local and State ordinances.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Aerobic lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. The animal waste lagoons commonly used in farming operations are not considered in the ratings. They are generally deeper than the lagoons referred to in the table and rely on anaerobic bacteria to decompose waste materials.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope or

bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a plastic liner or thin layer of soil from a source away from the site. Both types of landfill must be able to bear heavy vehicular traffic. Ease of excavation and revegetation should be considered.

The risk of ground-water pollution from landfills has caused an increase in State and Federal regulation of their design, operation, and maintenance. Regulations may specify the type of waste materials that can be buried as well as require landfills to have plastic liners and underlying drainage systems.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, soil reaction, and content of sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good*, *fair*, or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site

features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* have more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Richmond County has several sand and gravel pits in the Sandhills region (fig. 10). Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness



Figure 10.—An area of Pits, quarry. The mining of sand has created numerous areas like this in Richmond County.

of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean

sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale, siltstone, and

weathered granite saprolite, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant nutrients as it decomposes.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or

embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area. Ponds that are less than about 2 acres in size are not shown on the maps because of the scale of mapping. Many irrigation ponds have been made in Richmond County, especially in the Sandhills region (fig. 11).

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or sodium. Depth to a high water table affects the amount of usable material. It also affects trafficability.

Soil material that has a high content of sodium also is poorly suited to use in the construction of embankments because it is characterized by a high rate of dispersion. In Richmond County, there may be a sodium problem for the saprolite of some soils in the Triassic Basin, such as Exway, Creedmoor, and Mayodan soils.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or to other layers that affect the rate of water movement, permeability, depth to a high water table or depth of standing water if the soil is subject to ponding, slope, susceptibility to flooding, subsidence of organic layers, and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity. Availability of drainage outlets is not considered in the ratings.

Drainage may be a major management consideration in some areas. Management of drainage in conformance with regulations concerning wetlands may require special



Figure 11.—An irrigation pond on Alley loamy sand, 8 to 15 percent slopes, that was created by building a dam across a small stream flowing through the map unit.

permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock. The performance of a system is affected by the availability of

suitable irrigation water, the depth of the root zone, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the

construction of grassed waterways. A hazard of soil blowing, a low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed (13). During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages, by weight, of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, by volume, an appropriate

modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (2) and the system adopted by the American Association of State Highway and Transportation Officials (1).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on

laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $\frac{1}{3}$ -bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The

most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time. It is the difference between the amount of soil water at field moisture capacity and the amount at wilting point.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to soil blowing

in cultivated areas. The groups indicate the susceptibility to soil blowing. The soils assigned to group 1 are the most susceptible to soil blowing, and those assigned to group 8 are the least susceptible. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.
- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.
4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep or very deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep to very deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to two hydrologic groups in table 16, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of

flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in table 16 are the depth to the high water table; the kind of water table—that is, *perched* or *apparent*; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Depth to bedrock is given if bedrock is within a depth of

5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (15). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 17 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid climate, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizon development, plus *udult*, the suborder of the Ultisols that occurs in humid climates).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the

properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is clayey, mixed, thermic Typic Hapludults.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the underlying material within a series. The Mayodan series is an example of clayey, mixed, thermic Typic Hapludults.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The location of the typical pedon is described, and coordinates generally are identified by longitude and latitude. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (16). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (15) and in "Keys to Soil Taxonomy" (17). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Ailey Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow in the lower part of the Bt horizon and in the C horizon

Landform: Uplands of the Sandhills and Coastal Plain

Landscape position: Broad ridges and side slopes

Parent material: Unconsolidated marine sediments

Slope range: 0 to 25 percent

Classification: Loamy, siliceous, thermic Arenic
Kanhapludults

Typical Pedon

Ailey loamy sand, 0 to 8 percent slopes (fig. 12); 8.0 miles northeast of Rockingham on U.S. Highway 1, about 1.1 miles southeast on Secondary Road 1605, about 135 feet northeast of the road, in woods; USGS Marston quadrangle; lat. 34 degrees 57 minutes 58 seconds N. and long. 79 degrees 37 minutes 09 seconds W.

A—0 to 6 inches; brown (10YR 5/3) loamy sand; single grained; loose; very strongly acid; abrupt smooth boundary.

E—6 to 25 inches; very pale brown (10YR 7/4) loamy sand; single grained; loose; very strongly acid; clear wavy boundary.

Bt—25 to 33 inches; brownish yellow (10YR 6/8) sandy loam that has 1- to 2-inch-thick strata of sandy clay loam; weak medium subangular blocky structure; friable; few thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btx—33 to 46 inches; reddish yellow (7.5YR 6/6) sandy clay loam; 85 percent weak medium subangular blocky structure and 15 percent strong coarse platy structure; blocky peds are friable and platy peds are extremely firm when moist; platy peds are hard and brittle when dry; few faint clay films on faces of some peds; very strongly acid; gradual wavy boundary.

BC—46 to 55 inches; reddish yellow (7.5YR 6/6) sandy loam; weak medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

Cd—55 to 65 inches; 35 percent strong brown (7.5YR 5/6), 35 percent light red (2.5YR 6/8), and 30 percent light gray (10YR 7/2) sandy loam; massive; hard and very firm in place; very strongly acid.

Range in Characteristics

Thickness of solum: 42 to more than 60 inches

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid to slightly acid in the A and E horizons; very strongly acid or strongly acid in the B and C horizons

Content and size of rock fragments: 0 to 25 percent, by volume, throughout the profile; mostly quartz gravel

A or Ap horizon:

Hue—10YR or 2.5Y

Value—3 to 5

Chroma—1 to 3

Texture—loamy sand or sand in the fine-earth fraction

E horizon:

Hue—10YR or 2.5Y

Value—4 to 7

Chroma—3 to 8

Texture—coarse sand, sand, loamy coarse sand, or loamy sand in the fine-earth fraction

Bt horizon:

Hue—5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; shades of brown or red

Texture—coarse sandy loam, sandy loam, or sandy clay loam in the fine-earth fraction

Btx horizon:

Hue—5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; mottles are in shades of brown, red, or gray or horizon is mottled in shades of yellow, brown, or red and may or may not have gray mottles

Texture—sandy loam or sandy clay loam in the fine-earth fraction

Brittleness—10 to 40 percent

BC horizon (if it occurs):

Hue—5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Mottles—shades of yellow, brown, red, or gray

Texture—sandy loam or sandy clay loam in the fine-earth fraction

Cd or 2Cd horizon:

Hue—2.5YR to 10YR

Value—4 to 7

Chroma—4 to 8

Mottles—mottles are in shades of yellow, brown, red, or gray or horizon is mottled in shades of yellow, brown, red, or gray

Texture—coarse sandy loam, sandy loam, sandy clay loam, or clay loam in the fine-earth fraction

Badin Series

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderate

Landform: Piedmont uplands

Landscape position: Ridges and side slopes

Parent material: Residuum weathered from Carolina Slate rock, such as phyllite and schist

Slope range: 2 to 55 percent

Classification: Clayey, mixed, thermic Typic Hapludults

Typical Pedon

Badin channery silt loam in an area of Badin-Goldston complex, 8 to 15 percent slopes; 4.5 miles south of Covington on Secondary Road 1005 to Secondary Road 1307, about 300 feet north of the intersection and 100 feet west of the road, in woods; USGS Ellerbe quadrangle; lat. 35 degrees 04 minutes 55 seconds N. and long. 79 degrees 46 minutes 06 seconds W.

- A—0 to 5 inches; yellowish brown (10YR 5/4) channery silt loam; strong medium granular structure; friable; many fine, common medium, and few coarse roots; 20 percent channers, by volume; very strongly acid; clear wavy boundary.
- Bt1—5 to 10 inches; yellowish red (5YR 5/8) silty clay loam; few medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; common fine and few medium roots; few distinct clay films on faces of peds; 5 percent channers, by volume; very strongly acid; clear wavy boundary.
- Bt2—10 to 31 inches; red (2.5YR 5/8) silty clay; common medium distinct yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; 5 percent channers, by volume; very strongly acid; clear wavy boundary.
- Cr—31 to 60 inches; mottled brownish yellow (10YR 6/8) and red (2.5YR 4/6) soft, weathered, highly fractured slate bedrock that can be dug with difficulty with a spade.

Range in Characteristics

- Thickness of solum:* 20 to 40 inches
- Depth to bedrock:* 20 to 40 inches to soft, weathered bedrock (fig. 13); 40 inches or more to hard, unweathered bedrock
- Reaction:* Extremely acid to slightly acid in the A horizon; extremely acid to strongly acid in the lower horizons
- Content and size of rock fragments:* 0 to 35 percent, by volume, in the A and Bt horizons and 20 to 60 percent in the BC horizon; mostly channers
- A or Ap horizon:*
 Hue—5YR to 2.5Y
 Value—4 or 5
 Chroma—2 to 8
 Texture—silt loam or silty clay loam in the fine-earth fraction
- E horizon (if it occurs):*
 Hue—7.5YR to 2.5Y
 Value—5 or 7
 Chroma—2 to 4

Texture—very fine sandy loam, loam, or silt loam in the fine-earth fraction

BA horizon (if it occurs):

Hue—5YR to 10YR
 Value—4 to 6
 Chroma—2 to 6
 Texture—loam, silt loam, or silty clay loam in the fine-earth fraction

BE horizon (if it occurs):

Hue—2.5YR to 7.5YR
 Value—4 to 6
 Chroma—4 to 8
 Texture—loam, silt loam, or silty clay loam in the fine-earth fraction

Bt horizon:

Hue—2.5YR to 7.5YR
 Value—4 to 6
 Chroma—4 to 8
 Mottles—in some pedons; shades of red, yellow, or brown
 Texture—silty clay loam, clay loam, silty clay, or clay in the fine-earth fraction

BC horizon (if it occurs):

Hue—2.5YR to 7.5YR
 Value—4 to 6
 Chroma—4 to 8
 Mottles—mottles are in shades of red, yellow, or brown or horizon is mottled in shades of red, yellow, or brown
 Texture—silt loam, clay loam, or silty clay loam in the fine-earth fraction

C horizon (if it occurs):

Hue—horizon has hue of 2.5YR to 7.5YR or is multicolored
 Value—4 to 6
 Chroma—3 to 8
 Mottles—in some pedons; horizon is mottled in shades of red, yellow, or brown
 Texture—silt loam or silty clay loam in the fine-earth fraction

Cr horizon:

Color—multicolored
 Texture—soft, weathered, fractured slate bedrock that can be dug with difficulty with a spade

Candor Series

Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderate to rapid

Landform: Uplands of the Coastal Plain and Sandhills

Landscape position: Broad ridges and side slopes

Parent material: Unconsolidated marine sediments

Slope range: 0 to 15 percent

Classification: Sandy, siliceous, thermic Arenic Paleudults

Typical Pedon

Candor sand (fig. 14) in an area of Wakulla and Candor soils, 0 to 8 percent slopes; 0.6 mile southwest of Hoffman on U.S. Highway 1, about 3.4 miles northwest on Secondary Road 1003, about 1.3 miles west on a dirt road, 270 feet north of the dirt road, in woods; USGS Hoffman quadrangle; lat. 35 degrees 04 minutes 11 seconds N. and long. 79 degrees 36 minutes 54 seconds W.

- A—0 to 3 inches; grayish brown (10YR 5/2) sand; single grained; loose; common fine and medium and few coarse roots; very strongly acid; abrupt smooth boundary.
- E—3 to 23 inches; light yellowish brown (10YR 6/4) sand; single grained; loose; common fine and medium and few coarse roots; very strongly acid; clear wavy boundary.
- Bt—23 to 35 inches; yellowish brown (10YR 5/8) loamy sand; weak medium subangular blocky structure; very friable; few fine and common medium roots; very strongly acid; gradual wavy boundary.
- E₁—35 to 54 inches; yellowish brown (10YR 5/8) sand; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.
- E₂—54 to 62 inches; brownish yellow (10YR 6/6) sand; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.
- B_{t1}—62 to 68 inches; strong brown (7.5YR 5/8) sandy loam; few medium distinct brownish yellow (10YR 6/6) and few fine distinct yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; few sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.
- B_{t2}—68 to 80 inches; yellowish red (5YR 5/8) sandy clay loam; few medium prominent brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; few sand grains coated and bridged with clay; very strongly acid.

Range in Characteristics

Thickness of solum: Greater than 60 inches

Depth to bedrock: Greater than 60 inches

Reaction: Extremely acid to slightly acid in the A and E horizons; extremely acid to strongly acid in the lower horizons

Content and size of rock fragments: 0 to 5 percent, by

volume, in the A, E, and Bt horizons and 0 to 30 percent in the E₁, Bt, BC, and C horizons; mostly quartz gravel

A or Ap horizon:

Hue—10YR or 2.5Y

Value—3 to 5

Chroma—2 or 3

Texture—sand

E horizon:

Hue—10YR or 2.5Y

Value—5 to 7

Chroma—3 to 6

Texture—sand

Bt horizon:

Hue—7.5YR or 10YR

Value—5 or 6

Chroma—4 to 8

Texture—loamy sand

E horizon:

Hue—7.5YR or 10YR

Value—5 to 8

Chroma—3 to 8

Mottles—in some pedons; horizon is mottled in shades of yellow or brown

Texture—sand or loamy sand in the fine-earth fraction

Bt horizon:

Hue—5YR to 10YR

Value—5 or 6

Chroma—4 to 8

Mottles—in some pedons; horizon is mottled in shades of yellow, brown, red, or gray or has mottles in these shades

Texture—sandy loam, sandy clay loam, or sandy clay in the fine-earth fraction

BC horizon (if it occurs):

Hue—2.5YR to 7.5YR

Value—6 to 8

Chroma—4 to 8

Mottles—in some pedons; shades of yellow, brown, red, gray, or white

Texture—sandy loam to clay in the fine-earth fraction

C horizon (if it occurs):

Hue—2.5YR to 7.5YR

Value—6 to 8

Chroma—4 to 8

Mottles—in some pedons; shades of yellow, brown, red, gray, or white

Texture—sandy loam to clay in the fine-earth fraction

Chewacla Series*Depth class:* Very deep*Drainage class:* Somewhat poorly drained*Permeability:* Moderate*Landform:* River or stream valleys*Landscape position:* Flood plains*Parent material:* Alluvium*Slope range:* 0 to 2 percent*Classification:* Fine-loamy, mixed, thermic Fluvaquentic

Dystrochrepts

Typical Pedon

Chewacla loam, 0 to 2 percent slopes, frequently flooded; 4.6 miles west and north of Mangum on Secondary Road 1148 to gated Leak Island road, 1.8 miles south to Duck Pond Road, 0.4 mile southeast on Duck Pond Road, 500 feet northwest of the duck pond; USGS Mangum quadrangle; lat. 35 degrees 06 minutes 51 seconds N. and long. 80 degrees 03 minutes 05 seconds W.

Ap—0 to 8 inches; yellowish brown (10YR 5/4) loam; weak medium granular structure; very friable; many fine and medium roots; few fine flakes of mica; strongly acid; abrupt smooth boundary.

Bw1—8 to 20 inches; brown (10YR 5/3) loam; weak medium subangular blocky structure; very friable; many fine roots; common medium prominent pale yellow (5Y 7/3) irregularly shaped iron depletions with clear boundaries in the matrix; few fine prominent reddish yellow (7.5YR 6/8) masses of iron accumulation with clear boundaries in the matrix; few fine black and brown manganese concretions; few fine flakes of mica; very strongly acid; clear wavy boundary.

Bw2—20 to 34 inches; 35 percent yellowish brown (10YR 5/8), 35 percent dark brown (7.5YR 3/4), and 30 percent light gray (2.5Y 7/2) loam; weak medium subangular blocky structure; friable; few fine roots; light gray areas are iron depletions; few fine black and dark brown manganese concretions; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bw3—34 to 43 inches; 35 percent strong brown (7.5YR 5/8), 35 percent very pale brown (10YR 7/3), and 30 percent light gray (2.5Y 7/2) clay loam; weak medium subangular blocky structure; friable; few fine roots; strong brown areas are iron accumulations and light gray areas are iron depletions; few fine dark brown manganese concretions; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bg—43 to 66 inches; light brownish gray (2.5Y 6/2) clay loam; weak medium subangular blocky structure; friable; few fine roots; common medium prominent strong brown (7.5YR 5/8) and common medium distinct light yellowish brown (10YR 6/4) irregularly

shaped iron accumulations with clear boundaries in the matrix; few fine flakes of mica; very strongly acid.

Range in Characteristics*Thickness of solum:* 15 to 70 inches*Depth to bedrock:* Greater than 60 inches

Reaction: Very strongly acid to slightly acid within a depth of 40 inches, except in limed areas; very strongly acid to slightly alkaline below a depth of 40 inches

A or Ap horizon:

Hue—5YR to 10YR

Value—3 to 5

Chroma—1 to 4

Texture—loam

AB or BA horizon (if it occurs):

Hue—7.5YR to 2.5Y

Value—4 to 7

Chroma—3 to 8

Texture—loam, silt loam, clay loam, or silty clay loam

Bw horizon:

Hue—5YR to 2.5Y

Value—4 to 7

Chroma—3 to 8

Redoximorphic features—in some pedons some subhorizons have iron accumulations in shades of yellow, brown, or red and iron depletions in shades of gray, white, yellow, or brown

Texture—sandy loam, fine sandy loam, loam, silt loam, sandy clay loam, clay loam, or silty clay loam

Bg horizon (if it occurs):

Hue—horizon has hue of 10YR or 2.5Y or is neutral in hue

Value—4 to 7

Chroma—0 to 2

Redoximorphic features—iron accumulations in shades of yellow, brown, or red

Texture—fine sandy loam, sandy loam, loam, silt loam, sandy clay loam, clay loam, or silty clay loam

BC horizon (if it occurs):

Hue—5YR to 2.5Y

Value—4 to 7

Chroma—3 to 8

Redoximorphic features—some pedons have iron accumulations in shades of yellow, brown, or red and iron depletions in shades of gray, white, yellow, or brown

Texture—sandy loam, fine sandy loam, loam, silt loam, sandy clay loam, clay loam, or silty clay loam

BCg horizon (if it occurs):

Hue—horizon has hue of 10YR or 2.5Y or is neutral in hue

Value—4 to 7
 Chroma—0 to 2
 Redoximorphic features—iron accumulations in shades of yellow, brown, or red
 Texture—fine sandy loam, sandy loam, loam, silt loam, sandy clay loam, clay loam, or silty clay loam

C or Cg horizon:

Hue—horizon has hue of 5YR to 2.5Y or is neutral in hue
 Value—4 to 7
 Chroma—0 to 8
 Redoximorphic features—in some pedons; iron accumulations in shades of yellow, brown, or red or iron depletions in shades of gray, white, yellow, or brown
 Texture—loamy to a depth of 40 inches; variable below a depth of 40 inches

Creedmoor Series

Depth class: Very deep
Drainage class: Moderately well drained to somewhat poorly drained
Permeability: Very slow
Landform: Piedmont uplands
Landscape position: Broad ridges and side slopes
Parent material: Residuum weathered from Triassic rock, such as siltstone and mudstone
Slope range: 2 to 8 percent
Classification: Clayey, mixed, thermic Aquic Hapludults

Typical Pedon

Creedmoor fine sandy loam, 2 to 8 percent slopes; 0.6 mile west of Mangum on Secondary Road 1148 to N.C. Highway 109, about 1.3 miles north on the highway, 275 feet west of the highway, in a plantation of loblolly pine; USGS Mount Gilead West quadrangle; lat. 35 degrees 08 minutes 18 seconds N. and long. 80 degrees 00 minutes 22 seconds W.

Ap—0 to 3 inches; brown (10YR 5/3) fine sandy loam; weak medium granular structure; very friable; many fine, medium, and coarse roots; very strongly acid; abrupt smooth boundary.
 E—3 to 11 inches; light brownish yellow (10YR 6/4) fine sandy loam; weak medium granular structure; very friable; many fine, medium, and coarse roots; very strongly acid; clear wavy boundary.
 BE—11 to 16 inches; brownish yellow (10YR 6/6) loam; weak medium subangular blocky structure; friable; common fine, medium, and coarse roots; very strongly acid; gradual wavy boundary.
 Bt1—16 to 22 inches; yellowish brown (10YR 5/8) clay loam; moderate medium subangular blocky structure;

firm; few faint clay films on faces of peds; common medium distinct strong brown (7.5YR 5/8) and few fine prominent yellowish red (5YR 4/8) iron accumulations on faces of peds; few fine distinct light gray (10YR 7/1) iron depletions between peds; very strongly acid; gradual wavy boundary.

Bt2—22 to 43 inches; 60 percent yellowish brown (10YR 5/8) and 40 percent dark red (2.5YR 3/6) clay loam; moderate medium subangular blocky structure; very firm; few faint clay films on faces of peds; common medium distinct yellowish red (5YR 4/8) iron accumulations on faces of peds; few medium distinct light gray (10YR 7/1) iron depletions between peds; dark red areas are relict parent material; very strongly acid; gradual wavy boundary.

BC—43 to 54 inches; 40 percent yellowish brown (10YR 5/8), 35 percent light gray (10YR 7/1), and 25 percent dark red (10R 3/6) clay loam; moderate medium subangular blocky structure; very firm; yellowish brown areas are iron accumulations and light gray areas are iron depletions; dark red areas are relict parent material; very strongly acid; gradual wavy boundary.

C—54 to 62 inches; dark reddish brown (2.5YR 3/4) silt loam; massive; very friable; common medium prominent light gray (10YR 7/2) irregularly shaped iron depletions in the matrix; very strongly acid.

Range in Characteristics

Thickness of solum: 25 to 60 inches
Depth to bedrock: Greater than 60 inches
Reaction: Extremely acid to slightly acid in the A horizon; extremely acid to strongly acid in the lower horizons

A or Ap horizon:

Hue—7.5YR to 2.5Y
 Value—3 to 6
 Chroma—1 to 6
 Texture—fine sandy loam

E horizon (if it occurs):

Hue—7.5YR to 2.5Y
 Value—5 to 7
 Chroma—2 to 4
 Texture—loamy sand, coarse sandy loam, sandy loam, fine sandy loam, loam, or silt loam

BE horizon (if it occurs):

Hue—10YR or 2.5Y
 Value—5 to 7
 Chroma—4 to 6
 Texture—sandy loam, loam, sandy clay loam, silt loam, or silty clay loam

Bt horizon:

Hue—7.5YR to 2.5Y

Value—5 to 7

Chroma—3 to 8

Mottles—in some pedons; horizon is mottled in shades of brown, yellow, or red or has mottles in these shades

Redoximorphic features—in some pedons; iron accumulations in shades of brown, yellow, or red and iron depletions in shades of gray, white, or yellow

Texture—sandy clay loam, silty clay loam, clay loam, sandy clay, silty clay, or clay

Btg horizon (if it occurs):

Hue—7.5YR to 2.5Y

Value—5 to 7

Chroma—1 or 2

Redoximorphic features—in some pedons; iron accumulations in shades of brown, yellow, or red

Texture—sandy clay loam, silty clay loam, clay loam, sandy clay, silty clay, or clay

BC horizon (if it occurs):

Hue—2.5YR to 2.5Y

Value—4 to 8

Chroma—3 to 8

Mottles—in some pedons; horizon is mottled in shades of red, brown, or yellow or has mottles in these shades

Redoximorphic features—iron accumulations in shades of brown, yellow, or red and iron depletions in shades of gray, white, or yellow

Texture—sandy clay loam, silty clay loam, clay loam, sandy clay, or silty clay

BCg horizon (if it occurs):

Hue—horizon has hue of 2.5YR to 2.5Y or is neutral in hue

Value—4 to 8

Chroma—0 to 2

Redoximorphic features—iron accumulations in shades of brown, yellow, or red

Texture—sandy clay loam, silty clay loam, clay loam, sandy clay, or silty clay

C horizon (if it occurs):

Hue—horizon has hue of 10R to 2.5Y or is multicolored

Value—3 to 8

Chroma—3 to 8

Mottles—in some pedons; horizon is mottled in shades of yellow, red, or brown

Redoximorphic features—iron accumulations in shades of brown, yellow, or red and iron depletions in shades of gray, white, or yellow

Texture—sandy loam, fine sandy loam, loam, silt

loam, sandy clay loam, clay loam, silty clay loam, sandy clay, or silty clay

Cg horizon (if it occurs):

Hue—horizon has hue of 10R to 2.5Y, is multicolored, or is neutral in hue

Value—3 to 8

Chroma—0 to 2

Mottles—in some pedons; horizon is mottled in shades of yellow, red, or brown

Redoximorphic features—iron accumulations in shades of brown, yellow, or red and iron depletions in shades of gray, white, or yellow

Texture—sandy loam, fine sandy loam, loam, silt loam, sandy clay loam, clay loam, or silty clay loam

Cr horizon (if it occurs):

Texture—soft, weathered, partially consolidated Triassic bedrock that can be dug with difficulty with a spade

R horizon (if it occurs):

Texture—hard Triassic bedrock

Cullen Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Piedmont uplands

Landscape position: Narrow ridges and side slopes

Parent material: Residium weathered from mixed felsic and mafic rock, such as granite and gabbro

Slope range: 15 to 35 percent

Classification: Clayey, mixed, thermic Typic Hapludults

Typical Pedon

Cullen fine sandy loam in an area of Cullen-Wynott complex, 15 to 35 percent slopes; 2.9 miles west of Rockingham on U.S. Highway 74 to Secondary Road 1109, about 1.5 miles southwest on Secondary Road 1109, about 0.7 mile west on a farm road, 300 feet south, in woods; USGS Rockingham quadrangle; lat. 34 degrees 56 minutes 51 seconds N. and long. 79 degrees 50 minutes 42 seconds W.

A—0 to 3 inches; brown (7.5YR 4/4) fine sandy loam; weak medium granular structure; friable; strongly acid; abrupt smooth boundary.

Bt—3 to 32 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; firm; few distinct clay films on faces of peds; strongly acid; clear wavy boundary.

BC—32 to 42 inches; red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; firm;

few fine flakes of mica; common dark brown streaks; strongly acid; gradual wavy boundary.

C1—42 to 50 inches; red (2.5YR 5/6) loam; massive; friable; few fine flakes of mica; strongly acid; gradual wavy boundary.

C2—50 to 60 inches; reddish yellow (5YR 6/6) loam; massive; friable; few fine flakes of mica; moderately acid.

Range in Characteristics

Thickness of solum: 40 to 60 inches or more

Depth to bedrock: Greater than 60 inches

Reaction: Strongly acid to slightly acid in the A horizon; strongly acid to moderately acid in the lower horizons

Content and size of rock fragments: 0 to 15 percent, by volume, throughout the solum; mostly quartz pebbles

A or Ap horizon:

Hue—5YR to 10YR

Value—3 to 5

Chroma—2 to 8

Texture—fine sandy loam

BA horizon (if it occurs):

Hue—2.5YR or 5YR

Value—4 or 5

Chroma—4 to 8

Texture—loam or clay loam

Bt horizon:

Hue—10R or 2.5YR

Value—3 to 5

Chroma—4 to 8

Mottles—in some pedons; shades of red, yellow, or brown

Texture—clay loam, silty clay loam, silty clay, or clay

BC horizon (if it occurs):

Hue—10R or 2.5YR

Value—4 to 6

Chroma—6 or 8

Mottles—in some pedons; shades of red, yellow, or brown

Texture—loam, silt loam, silty clay loam, or clay loam

C horizon:

Hue—horizon has hue of 10R to 5YR or is multicolored

Value—4 to 6

Chroma—3 to 8

Mottles—in most pedons; horizon is mottled in shades of red, yellow, or brown or has mottles in these shades

Texture—loam, silt loam, or clay loam

Davidson Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: River or stream valleys and Piedmont uplands

Landscape position: Ridges and side slopes on high stream terraces

Parent material: Old alluvium

Slope range: 2 to 15 percent

Classification: Clayey, kaolinitic, thermic Rhodic Kandiudults

Typical Pedon

Davidson clay loam, 8 to 15 percent slopes, eroded; 5.6 miles west of Rockingham on U.S. Highway 74, about 1,200 feet north on Secondary Road 1140 to a power line, 500 feet west along the power line, 50 feet south, in woods; USGS Rockingham quadrangle; lat. 34 degrees 56 minutes 55 seconds N. and long. 79 degrees 51 minutes 55 seconds W.

Ap—0 to 7 inches; dark reddish brown (2.5YR 3/4) clay loam; weak medium granular structure; friable; common fine and medium and few coarse roots; moderately acid; abrupt smooth boundary.

Bt1—7 to 40 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; friable; few fine, medium, and coarse roots; few faint clay films on faces of peds; moderately acid; gradual wavy boundary.

Bt2—40 to 56 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; 1 percent quartz pebbles, by volume; moderately acid; gradual wavy boundary.

Bt3—56 to 75 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; 2 percent quartz pebbles and 1 percent mafic pebbles, by volume; moderately acid.

Range in Characteristics

Thickness of solum: 60 inches or more

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid to slightly acid throughout the profile

Content and size of rock fragments: 0 to 14 percent throughout the profile; mostly quartz gravel

A or Ap horizon:

Hue—2.5YR or 5YR

Value—2 or 3

Chroma—2 to 6
Texture—clay loam

Bt horizon:

Hue—10R or 2.5YR
Value—2.5 or 3
Chroma—3 to 8
Mottles—in some pedons; shades of yellow or red in the middle and lower parts of the horizon
Texture—clay loam or clay

Enon Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow

Landform: Piedmont uplands

Landscape position: Ridgetops and side slopes

Parent material: Residuum weathered from mafic rock, such as diabase and gabbro

Slope range: 2 to 35 percent

Classification: Fine, mixed, thermic Ultic Hapludalfs

The Enon soils in Richmond County are considered taxadjuncts to the series because they have montmorillonitic mineralogy. This difference, however, does not significantly affect the use and management of the soils.

Typical Pedon

Enon gravelly loam in an area of Enon-Wynott complex, 4 to 15 percent slopes, very bouldery; 0.5 mile south of Exway on Secondary Road 1005, about 2.8 miles east on Secondary Road 1322 to a logging road, 0.3 mile north on the logging road, 5 feet east of the road; USGS Harrisville quadrangle; lat. 35 degrees 09 minutes 56 seconds N. and long. 79 degrees 51 minutes 55 seconds W.

A—0 to 6 inches; very dark grayish brown (10YR 3/2) gravelly loam; weak medium granular structure; friable; many fine, medium, and coarse roots; 15 percent pebbles, by volume; moderately acid; clear smooth boundary.

Btss—6 to 27 inches; dark yellowish brown (10YR 4/6) clay; strong medium and coarse angular blocky structure; firm; few fine, medium, and coarse roots; common nonintersecting slickensides; common distinct clay films on faces of peds; common fine black manganese concretions; strongly acid; gradual wavy boundary.

BC—27 to 39 inches; yellowish brown (10YR 5/6) clay loam; common coarse distinct strong brown (7.5YR 5/6), common medium distinct very dark gray (10YR 3/1), and common medium faint brownish yellow (10YR 6/6) mottles; moderate medium subangular

blocky structure; friable; neutral; gradual wavy boundary.

C—39 to 60 inches; brownish yellow (10YR 6/6) loam; common coarse distinct strong brown (7.5YR 5/6) and olive yellow (2.5Y 6/6) mottles; massive; friable; neutral.

Range in Characteristics

Thickness of solum: 20 to 50 inches

Depth to bedrock: Greater than 60 inches

Reaction: Strongly acid to slightly acid in the upper horizons; strongly acid to slightly alkaline in the lower horizons

Content and size of rock fragments: 0 to 60 percent, by volume, in the A, Ap, and E horizons and 0 to 15 percent in the lower horizons; commonly ranging from gravel to stones

A horizon:

Hue—7.5YR to 2.5Y

Value—3 to 5

Chroma—2 to 4

Texture—loam in the fine-earth fraction

E horizon (if it occurs):

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—2 to 4

Texture—sandy loam, fine sandy loam, or loam in fine-earth fraction

BA or BE horizon (if it occurs):

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—3 to 8

Texture—loam, sandy clay loam, or clay loam

Bt horizon:

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; high- and low-chroma mottles in the lower part of the horizon

Texture—clay loam or clay

BC or CB horizon (if it occurs):

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; horizon is mottled with these colors or has mottles with high or low chroma

Texture—sandy clay loam, loam, or clay loam

C horizon:

Hue—horizon has hue of 7.5YR to 2.5Y or is multicolored

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons horizon is mottled or has mottles

Texture—variable; typically loamy

Exway Series

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderately slow

Landform: Piedmont uplands

Landscape position: Ridges and side slopes

Parent material: Residuum weathered from Triassic rock, such as mudstone and siltstone

Slope range: 2 to 15 percent

Classification: Clayey, mixed, thermic Typic Rhodudults

Typical Pedon

Exway clay loam in an area of Mayodan-Exway complex, 2 to 8 percent slopes, eroded; 0.8 mile west of Covington on Secondary Road 1152, about 0.1 mile north on Secondary Road 1186, about 0.6 mile northwest on a farm road, 350 feet northwest to the east corner of a crop field; USGS Mount Gilead East quadrangle; lat. 35 degrees 08 minutes 11 seconds N. and long. 79 degrees 52 minutes 08 seconds W.

Ap—0 to 4 inches; dark reddish brown (5YR 3/4) clay loam; moderate medium granular structure; friable; many fine, medium, and coarse roots; 3 percent pebbles, by volume; slightly acid; clear smooth boundary.

Bt1—4 to 12 inches; dark red (2.5YR 3/6) silty clay, reddish brown (2.5YR 4/4) dry; common fine distinct yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; firm; common fine, medium, and coarse roots; common distinct clay films on faces of peds; 5 percent pebbles, by volume; strongly acid; gradual wavy boundary.

Bt2—12 to 19 inches; dark reddish brown (2.5YR 3/4) silty clay, reddish brown (2.5YR 4/4) dry; common medium distinct red (2.5YR 4/8), dark red (10R 3/6), and reddish yellow (5YR 6/8) mottles; strong medium subangular blocky structure; firm; common fine and medium roots; common distinct clay films on faces of peds; 5 percent pebbles, by volume; strongly acid; gradual wavy boundary.

BC—19 to 24 inches; dark reddish brown (2.5YR 3/4) silty clay loam; common medium distinct red (2.5YR 4/8), dark red (10R 3/6), and reddish yellow (5YR 6/8) and few fine prominent pinkish gray (5YR 7/2) mottles; massive; friable; common fine and medium roots; 10 percent pebbles, by volume; very strongly acid; gradual irregular boundary.

Cr—24 to 40 inches; multicolored soft, weathered, interbedded siltstone and mudstone bedrock that can be dug with difficulty with a spade.

Range in Characteristics

Thickness of solum: 19 to 39 inches

Depth to bedrock: 20 to 40 inches to soft, weathered bedrock; greater than 40 inches to hard, unweathered bedrock

Reaction: Very strongly acid to neutral in the A horizon; very strongly acid to moderately acid in the underlying horizons

Content and size of rock fragments: 0 to 14 percent in the A and B horizons; mostly quartz gravel

A or Ap horizon:

Hue—2.5YR to 7.5YR

Value—2 or 3

Chroma—2 to 6

Texture—clay loam

Bt horizon:

Hue—10R or 2.5YR

Value—3

Chroma—2 to 6

Mottles—in some pedons; shades of red, brown, or yellow

Texture—clay loam, silty clay loam, silty clay, or clay

BC horizon (if it occurs):

Hue—10R to 5YR

Value—2 to 4

Chroma—3 to 6

Mottles—in some pedons; shades of yellow, brown, red, or gray

Texture—silty clay loam, clay loam, or silty clay

Cr horizon:

Color—multicolored or mottled

Texture—soft, weathered Triassic rock, such as siltstone and mudstone, that can be dug with difficulty with a spade

Faceville Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Uplands of the Coastal Plain

Landscape position: Broad ridges

Parent material: Unconsolidated marine sediments

Slope range: 2 to 6 percent

Classification: Clayey, kaolinitic, thermic Typic Kandudults

Typical Pedon

Faceville sandy clay loam, 2 to 6 percent slopes, eroded;

0.2 mile north on South Carolina Secondary Road 17 from its junction with South Carolina Highway 385 in Bennettsville, 0.4 mile southeast on Breeden Road, 0.5 mile northeast on a farm road, 50 feet east of the road; USGS Bennettsville North quadrangle; lat. 34 degrees 39 minutes 32 seconds N. and long. 79 degrees 38 minutes 24 seconds W.

- Ap—0 to 6 inches; yellowish red (5YR 4/6) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; slightly acid; clear wavy boundary.
- Bt1—6 to 30 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.
- Bt2—30 to 42 inches; red (2.5YR 4/8) clay; common medium distinct yellow (10YR 7/8) mottles; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.
- Bt3—42 to 52 inches; red (2.5YR 4/8) clay; common medium distinct yellow (10YR 7/8) mottles; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; 1 percent rounded plinthis nodules, by volume; very strongly acid; gradual wavy boundary.
- Bt4—52 to 63 inches; red (2.5YR 4/8) clay; common medium prominent reddish yellow (7.5YR 7/8) mottles; moderate medium subangular blocky structure; friable; very strongly acid.

Range in Characteristics

Thickness of solum: 65 inches or more

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid to slightly acid in the A horizon; very strongly acid or strongly acid in the lower horizons

A or Ap horizon:

Hue—2.5YR to 10YR

Value—4 or 5

Chroma—2 to 8

Texture—sandy clay loam

BA horizon (if it occurs):

Hue—2.5YR to 7.5YR

Value—4 or 5

Chroma—6 or 8

Texture—sandy clay loam or clay loam

Bt horizon:

Hue—10R to 5YR

Value—4 or 5

Chroma—4 to 8

Mottles—in some pedons; mottles are in shades of yellow or brown in the lower subhorizons; horizon

is mottled in shades of yellow, red, or brown below a depth of 60 inches

Texture—clay loam, sandy clay, or clay

BC horizon (if it occurs):

Hue—10R to 5YR

Value—4 or 5

Chroma—4 to 8

Mottles—shades of yellow or brown; mottles are in shades of gray in some pedons; horizon is mottled in shades of red, brown, or yellow in some pedons

Texture—sandy clay loam or sandy clay

Goldston Series

Depth class: Shallow

Drainage class: Well drained to excessively drained

Permeability: Moderately rapid

Landform: Piedmont uplands

Landscape position: Narrow ridges and side slopes

Parent material: Carolina Slate rock, such as phyllite and schist

Slope range: 8 to 55 percent

Classification: Loamy-skeletal, siliceous, thermic, shallow Typic Dystrachrepts

Typical Pedon

Goldston very channery silt loam in an area of Goldston-Badin complex, 15 to 55 percent slopes; 2.9 miles west of Ellerbe on Secondary Road 1309 to Secondary Road 1148, about 3.3 miles west on Secondary Road 1148 to Secondary Road 1146, about 0.5 mile north on Secondary Road 1146 to a fire lane, 1,000 feet east along the fire lane; USGS Ellerbe quadrangle; lat. 35 degrees 03 minutes 34 seconds N. and long. 79 degrees 50 minutes 45 seconds W.

A—0 to 3 inches; yellowish brown (10YR 5/4) very channery silt loam; weak medium granular structure; very friable; many fine, medium, and coarse roots; 35 percent channers, by volume; 5 percent flagstones, by volume; very strongly acid; clear smooth boundary.

Bw1—3 to 10 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; friable; many fine, medium, and coarse roots; 35 percent channers, by volume; 5 percent flagstones, by volume; very strongly acid; gradual wavy boundary.

Bw2—10 to 15 inches; yellowish brown (10YR 5/4) very channery silt loam; weak fine subangular blocky structure; friable; common fine, medium, and coarse roots; 35 percent channers, by volume; 10 percent flagstones, by volume; very strongly acid; gradual wavy boundary.

Cr—15 to 25 inches; weak red (10R 4/4) soft, weathered,

fractured slate bedrock that can be dug with difficulty with a spade; common medium prominent reddish yellow (7.5YR 6/8) mottles.

R—25 inches; hard, unweathered slate bedrock.

Range in Characteristics

Thickness of solum: 10 to 20 inches

Depth to bedrock: 10 to 20 inches to soft, weathered bedrock; greater than 20 inches to hard, unweathered bedrock

Reaction: Extremely acid to slightly acid in the A horizon; extremely acid to moderately acid in the lower horizons

Content and size of rock fragments: Average of more than 35 percent, by volume, throughout the profile; mostly channers and flagstones

A horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 4

Texture—silt loam in the fine-earth fraction

E horizon (if it occurs):

Hue—10YR to 2.5Y

Value—4 to 7

Chroma—2 to 6

Texture—silt loam or very fine sandy loam in the fine-earth fraction

Bw horizon:

Hue—7.5YR to 2.5Y

Value—5 to 7

Chroma—3 to 8

Mottles—in some pedons; shades of brown, yellow, or red

Texture—silt loam or very fine sandy loam in the fine-earth fraction

Cr horizon:

Color—multicolored

Texture—soft, weathered, fractured slate bedrock

R horizon:

Texture—hard, unweathered slate bedrock

Hornsboro Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Slow

Landform: River or stream valleys

Landscape position: Broad stream terraces

Parent material: Old alluvium

Slope range: 0 to 2 percent

Classification: Fine, mixed, thermic Aeric Albaqualfs

Typical Pedon

Hornsboro silt loam, 0 to 2 percent slopes; 1 mile southeast of Littles Mill on N.C. Highway 73, about 0.5 mile south of the highway on an old logging road, 300 feet east on a firebreak line in a plantation of loblolly pine; USGS Mount Gilead East quadrangle; lat. 35 degrees 08 minutes 41 seconds N. and long. 79 degrees 54 minutes 31 seconds W.

Ap—0 to 5 inches; grayish brown (10YR 5/2) silt loam; weak medium granular structure; friable; common fine and medium roots; strongly acid; abrupt smooth boundary.

Btg—5 to 19 inches; light brownish gray (10YR 6/2) silty clay loam; moderate medium subangular blocky structure; firm; common fine and medium roots; few faint clay films on faces of peds; common coarse distinct brownish yellow (10YR 6/8) irregularly shaped masses of iron accumulation with sharp boundaries in the matrix; very strongly acid; gradual wavy boundary.

Bt1—19 to 30 inches; yellowish brown (10YR 5/6) silty clay; moderate medium subangular blocky structure; firm; few fine and medium roots; few faint clay films on faces of peds; common medium distinct light brownish gray (2.5Y 6/2) irregularly shaped iron depletions with clear boundaries in the matrix; very strongly acid; gradual wavy boundary.

Bt2—30 to 47 inches; yellowish brown (10YR 5/8) clay; moderate medium subangular blocky structure; very firm; few fine roots; few faint clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) irregularly shaped iron depletions with clear boundaries in the matrix; common fine distinct yellowish red (5YR 4/6) and few medium distinct strong brown (7.5YR 5/6) masses of iron accumulation with clear boundaries in the matrix; very strongly acid; gradual wavy boundary.

Bt3—47 to 55 inches; yellowish brown (10YR 5/6) clay; weak medium subangular blocky structure; firm; few faint clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) irregularly shaped iron depletions with clear boundaries in the matrix; few fine distinct yellowish red (5YR 4/6) and few medium distinct strong brown (7.5YR 5/6) masses of iron accumulation with sharp boundaries in the matrix; moderately alkaline; gradual wavy boundary.

BC—55 to 69 inches; dark yellowish brown (10YR 4/6) clay loam that has pockets of clay; weak medium subangular blocky structure; friable; common medium distinct light brownish gray (10YR 6/2) irregularly shaped iron depletions with clear boundaries in the matrix; moderately alkaline; gradual wavy boundary.

C—69 to 80 inches; 50 percent pale brown (10YR 6/3)

and 50 percent light gray (10YR 6/1) clay loam; massive; friable; moderately alkaline.

Range in Characteristics

Thickness of solum: 40 to 90 inches

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid to slightly alkaline in the A and E horizons; very strongly acid to moderately alkaline in the Bt and Btg horizons; slightly acid to moderately alkaline in the lower horizons

Content and size of rock fragments: 0 to 5 percent, by volume, in the A, BE, BA, Bt, and Btg horizons and 0 to 35 percent in the lower horizons; mostly quartz gravel

A horizon:

Hue—horizon has hue of 10YR or 2.5Y or is neutral in hue

Value—2 to 5

Chroma—0 to 4

Texture—silt loam

E or Eg horizon (if it occurs):

Hue—10YR to 5Y

Value—5 to 7

Chroma—2 to 4

Mottles—in some pedons; shades of gray, yellow, brown, olive, or red

Redoximorphic features—in some pedons; iron depletions in shades of white, gray, olive, or yellow and iron accumulations in shades of yellow or brown

Texture—sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam

BE or BA horizon (if it occurs):

Hue—10YR to 5Y

Value—5 to 7

Chroma—3 to 8

Mottles—in some pedons; horizon is mottled in shades of gray, yellow, brown, olive, or red or has mottles in these shades

Redoximorphic features—in some pedons; iron depletions in shades of white, gray, olive, or yellow and iron accumulations in shades of yellow, red, or brown

Texture—loam, sandy clay loam, silt loam, or silty clay loam

Btg horizon:

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—5 to 7

Chroma—0 to 2

Redoximorphic features—in some pedons; iron

accumulations in shades of yellow, olive, red, or brown

Texture—silty clay loam, clay loam, silty clay, sandy clay, or clay

Bt horizon:

Hue—10YR to 5Y

Value—5 to 7

Chroma—3 to 8

Redoximorphic features—in some pedons; iron depletions in shades of white, gray, olive, or yellow and iron accumulations in shades of yellow, red, or brown

Texture—silty clay loam, clay loam, silty clay, sandy clay, or clay

BC, 2BC, BCg, or 2BCg horizon (if it occurs):

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—4 to 7

Chroma—0 to 6

Redoximorphic features—in some pedons; iron depletions in shades of white, gray, olive, or yellow and iron accumulations in shades of yellow, olive, red, or brown

Texture—fine sandy loam, loam, sandy clay loam, clay loam, silty clay loam, or sandy clay in the fine-earth fraction

C or 2C horizon:

Hue—10YR to 5Y

Value—5 to 7

Chroma—3 to 8

Redoximorphic features—in some pedons; iron depletions in shades of white, gray, olive, or yellow and iron accumulations in shades of yellow, red, or brown

Texture—variable

Cg or 2Cg horizon (if it occurs):

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—5 to 7

Chroma—0 to 2

Redoximorphic features—in some pedons; iron accumulations in shades of yellow, olive, red, or brown

Texture—variable

Johnston Series

Depth class: Very deep

Drainage class: Very poorly drained

Permeability: Moderately rapid

Landform: River or stream valleys of the Sandhills and Coastal Plain

Landscape position: Flood plains

Parent material: Alluvium

Slope range: 0 to 2 percent

Classification: Coarse-loamy, siliceous, acid, thermic
Cumulic Humaquepts

Typical Pedon

Johnston mucky loam, 0 to 2 percent slopes, frequently flooded; 3.2 miles south of Hamlet on N.C. Highway 177, about 0.2 mile west on Secondary Road 1990, about 150 feet north of the road, in woods on Marks Creek flood plain; USGS Diggs quadrangle; lat. 34 degrees 50 minutes 50 seconds N. and long. 79 degrees 45 minutes 23 seconds W.

A1—0 to 25 inches; black (10YR 2/1) mucky loam; weak medium granular structure; very friable; many fine, medium, and coarse roots; very strongly acid; clear smooth boundary.

A2—25 to 34 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak medium granular structure; friable; many fine and medium and common coarse roots; very strongly acid; clear smooth boundary.

Cg1—34 to 45 inches; grayish brown (10YR 5/2) sandy loam that has pockets of loamy sand; massive; friable; few fine roots; common coarse faint pale brown (10YR 6/3) masses of iron accumulation with clear boundaries in the matrix; very strongly acid; gradual wavy boundary.

Cg2—45 to 62 inches; light gray (10YR 7/2) loamy sand; single grained; very friable; strongly acid.

Range in Characteristics

Thickness of solum: 24 to 48 inches

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid or strongly acid

A horizon:

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—2 or 3

Chroma—0 to 2

Texture—mucky loam or fine sandy loam

Cg horizon:

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—4 to 7

Chroma—0 to 2

Redoximorphic features—in some pedons; iron accumulations in shades of yellow or brown

Texture—loam, fine sandy loam, sandy loam, loamy sand, sand, or loamy fine sand; thin strata of sandy clay loam in some pedons

Masada Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: River or stream valleys and uplands of the Piedmont and Coastal Plain

Landscape position: Narrow ridges and side slopes on high stream terraces

Parent material: Old alluvium

Slope range: 8 to 25 percent

Classification: Clayey, mixed, thermic Typic Hapludults

Typical Pedon

Masada sandy loam, 8 to 15 percent slopes; 0.5 mile south of Exway on Secondary Road 1005, about 3.1 miles east on Secondary Road 1322, about 0.6 mile north on Secondary Road 1323, about 130 feet south, in woods; USGS Harrisville quadrangle; lat. 35 degrees 09 minutes 56 seconds N. and long. 79 degrees 49 minutes 06 seconds W.

Ap—0 to 6 inches; strong brown (7.5YR 5/6) sandy loam; weak medium granular structure; friable; common fine, medium, and coarse roots; 2 percent quartz pebbles, by volume; very strongly acid; abrupt smooth boundary.

Bt1—6 to 16 inches; red (2.5YR 4/8) sandy clay; moderate medium subangular blocky structure; friable; common fine and medium and few coarse roots; few faint clay films on faces of peds; 2 percent quartz pebbles, by volume; very strongly acid; gradual wavy boundary.

Bt2—16 to 25 inches; red (2.5YR 4/8) clay; few medium prominent brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; few fine and medium roots; few faint clay films on faces of peds; 2 percent quartz pebbles, by volume; very strongly acid; clear wavy boundary.

Bt3—25 to 47 inches; red (2.5YR 4/8) clay; common medium prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

BC—47 to 57 inches; 45 percent red (2.5YR 4/8), 35 percent brownish yellow (10YR 6/8), and 20 percent yellow (10YR 7/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; 5 percent quartz pebbles, by volume; very strongly acid; clear wavy boundary.

C—57 to 70 inches; 45 percent red (2.5YR 4/8), 30 percent brownish yellow (10YR 6/6), and 25 percent pale brown (10YR 6/3) sandy clay loam that has

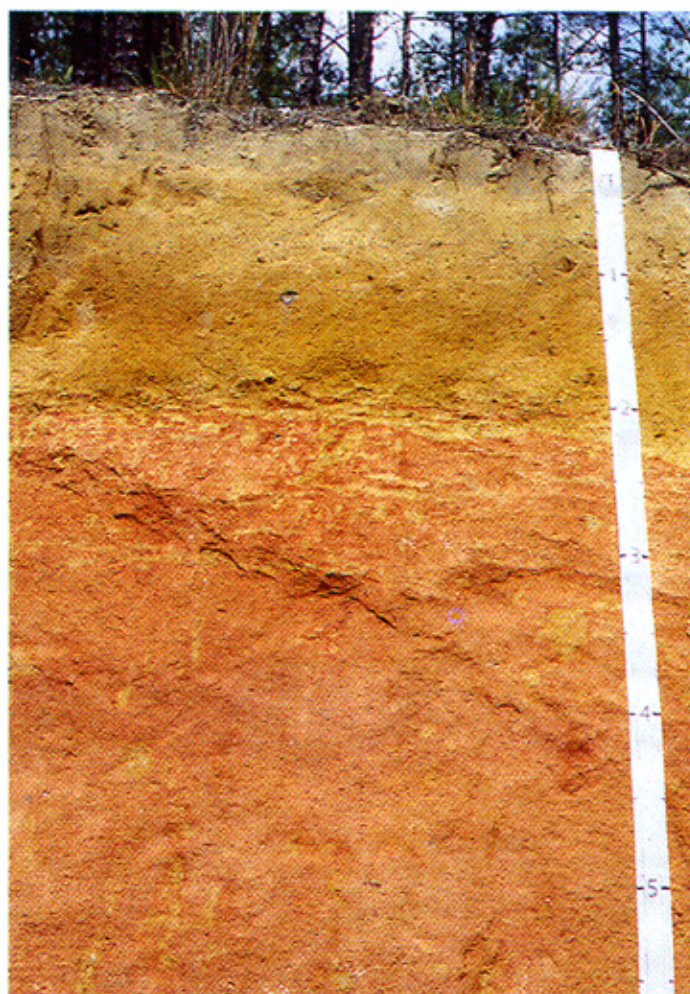


Figure 12.—Typical profile of Ailey soil. This soil is sandy in the upper part, has a loamy subsoil, and has a partially restrictive layer generally between depths of 40 and 60 inches.

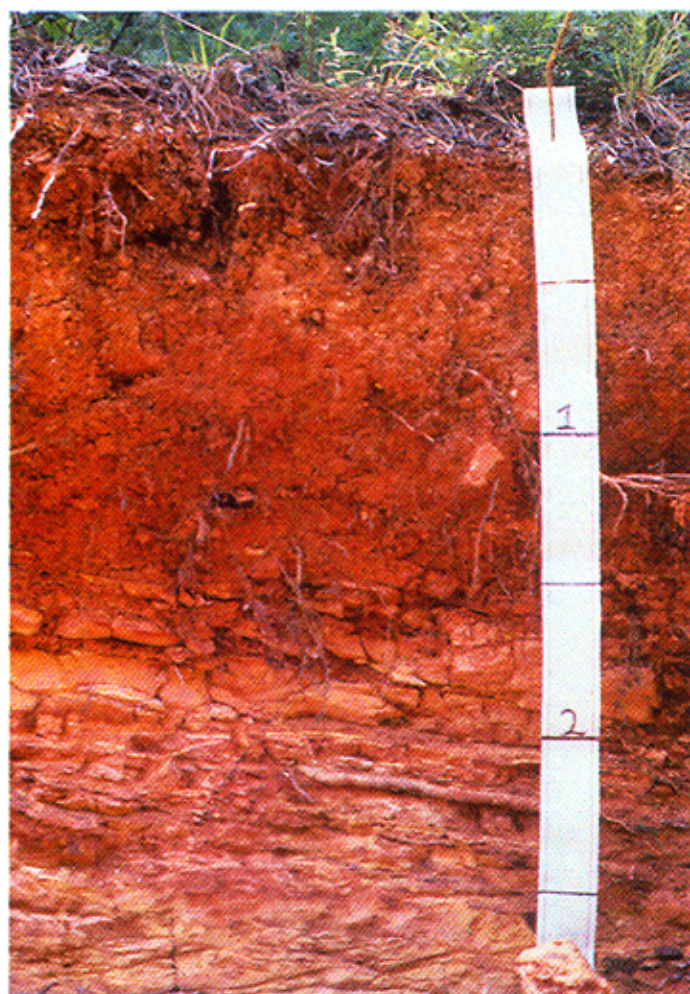


Figure 13.—Profile of Badin soil. This soil is clayey, does not have wetness problems, and has a restrictive layer (soft bedrock) within a depth of 20 to 40 inches.



Figure 14.—Typical profile of Candor soil. This soil is sandy in the upper part, does not have restrictive layers within a depth of 60 inches, and is droughty.

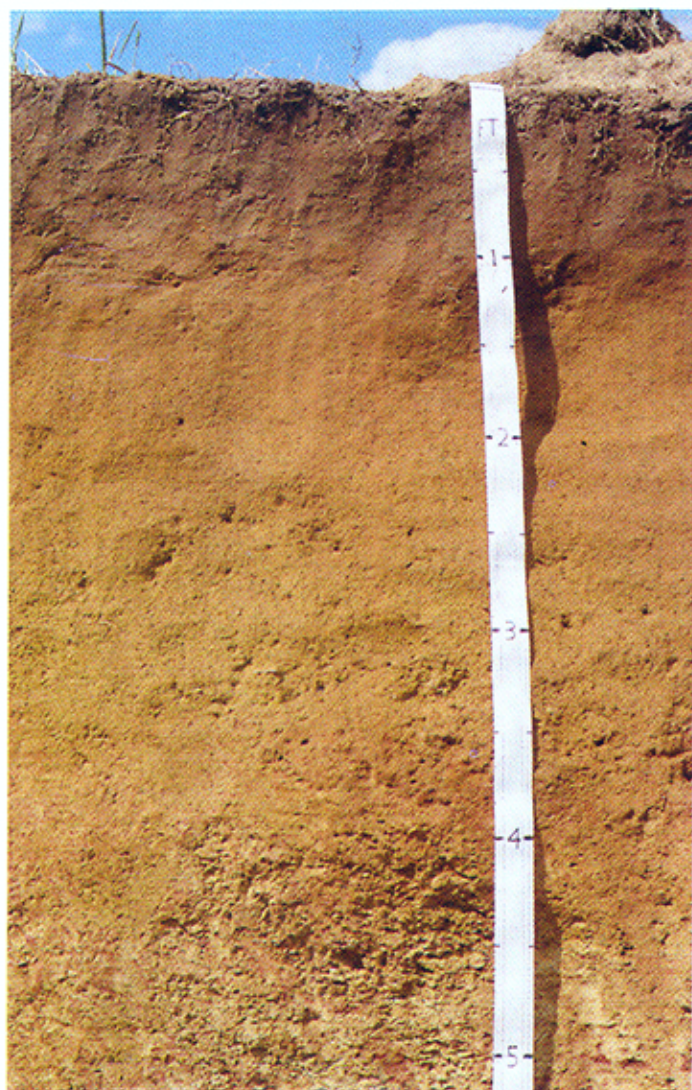


Figure 15.—Typical profile of Norfolk soil. This soil is fine-loamy, does not have restrictive layers within a depth of 60 inches, and has ground water within a depth of 48 to 72 inches during the wetter periods.



Figure 16.—Typical profile of Peawick soil. This soil is clayey, does not have restrictive layers within a depth of 60 inches, and has ground water within a depth of 18 to 36 inches during the wetter periods.



Figure 17.—Typical profile of Pelion soil. This soil is loamy, has a partially restrictive layer between depths of 20 and 60 inches, and may have ground water within a depth of 12 inches during the wetter periods.

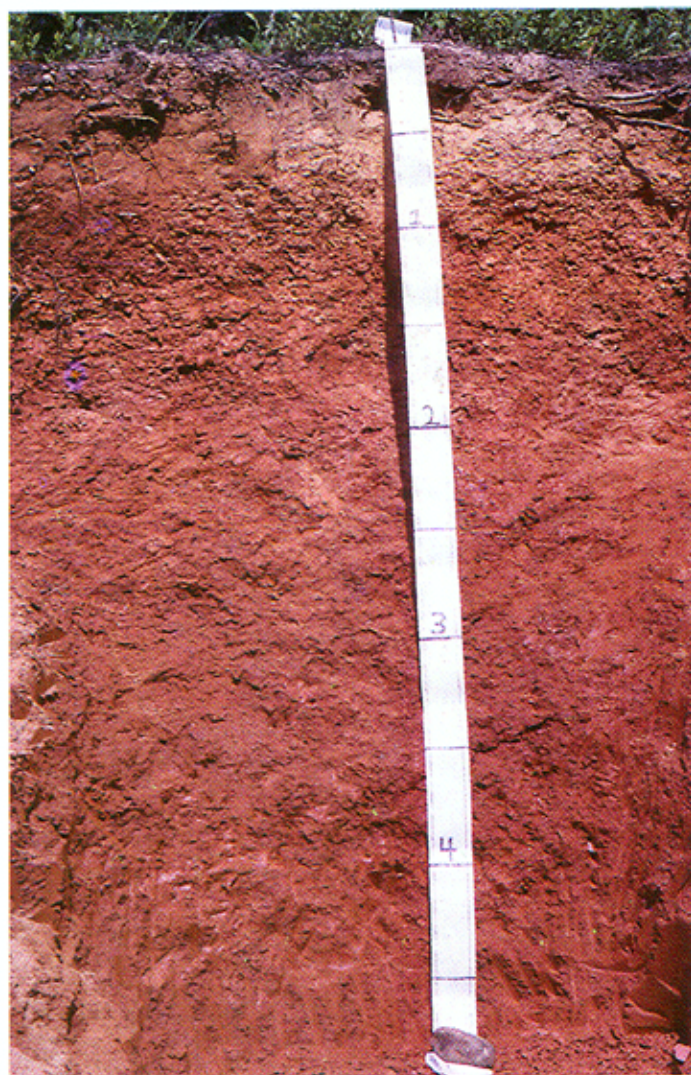


Figure 18.—Typical profile of Uwharrie soil. This soil is clayey and does not have wetness problems or restrictive layers within a depth of 60 inches.

pockets of sandy clay; massive; friable; 2 percent quartz pebbles, by volume; very strongly acid.

Range in Characteristics

Thickness of solum: 40 to 60 inches

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid to slightly acid in the A horizon; very strongly acid or strongly acid in the lower horizons

Content and size of rock fragments: 0 to 50 percent in the A horizon and 0 to 35 percent in the lower horizons; mostly quartz gravel

A or Ap horizon:

Hue—7.5YR to 2.5Y

Value—3 to 8

Chroma—1 to 8

Texture—sandy loam in the fine-earth fraction

E horizon (if it occurs):

Hue—7.5YR to 2.5Y

Value—3 to 8

Chroma—2 to 8

Texture—loamy fine sand, sandy loam, fine sandy loam, or loam in the fine-earth fraction

BE or BA horizon (if it occurs):

Hue—5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Texture—loam, sandy clay loam, or clay loam in the fine-earth fraction

Bt horizon:

Hue—2.5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; shades of yellow, brown, or red

Texture—clay loam, sandy clay, or clay in the fine-earth fraction

BC horizon (if it occurs):

Hue—2.5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; horizon is mottled in shades of yellow, brown, or red or has mottles in these shades

Texture—sandy clay loam, clay loam, sandy clay, or clay in the fine-earth fraction

C horizon:

Hue—horizon has hue of 2.5YR to 10YR or is multicolored in shades of yellow, brown, and red
Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; horizon is mottled in shades of yellow, brown, or red or has mottles in these shades

Texture—sandy loam, sandy clay loam, or clay loam in the fine-earth fraction

Mayodan Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Piedmont uplands

Landscape position: Ridges and side slopes

Parent material: Residuum weathered from Triassic rock, such as siltstone and mudstone

Slope range: 2 to 35 percent

Classification: Clayey, mixed, thermic Typic Hapludults

Typical Pedon

Mayodan sandy clay loam, 8 to 15 percent slopes, eroded; 2.8 miles south of Ellerbe on U.S. Highway 220, about 0.3 mile north of the intersection of the highway and Secondary Road 1446, about 350 feet east of the highway, in woods; USGS Ellerbe quadrangle; lat. 35 degrees 01 minute 05 seconds N. and long. 79 degrees 46 minutes 06 seconds W.

A—0 to 5 inches; strong brown (7.5YR 4/6) sandy clay loam; moderate medium granular structure; friable; many fine and medium and few coarse roots; very strongly acid; clear wavy boundary.

BE—5 to 8 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; many fine and medium and few coarse roots; 5 percent quartz pebbles, by volume; very strongly acid; clear wavy boundary.

Bt1—8 to 34 inches; red (2.5YR 4/6) clay; common medium distinct yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; common fine and medium and few coarse roots; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—34 to 43 inches; red (2.5YR 4/6) silty clay; common medium distinct yellowish red (5YR 5/6) and few medium faint dark red (2.5YR 3/6) mottles; moderate medium subangular blocky structure; firm; common fine and medium roots; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

BC—43 to 48 inches; red (2.5YR 4/6) silty clay loam; common medium distinct yellowish red (5YR 5/6) and common medium faint dark red (2.5YR 3/6) mottles;

weak medium subangular blocky structure; friable; common fine and medium roots; very strongly acid; clear wavy boundary.

C—48 to 62 inches; dark red (2.5YR 3/6) silt loam that has pockets of silty clay loam; common medium distinct yellowish red (5YR 5/6) and few fine prominent gray (N 6/0) mottles; massive; friable; very strongly acid.

Range in Characteristics

Thickness of solum: 30 to 60 inches

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid to slightly acid in the A horizon; very strongly acid to moderately acid in the upper part of the B horizon; very strongly acid or strongly acid in the lower horizons

Content of rock fragments: Generally 0 to 35 percent, by volume, in the A and E horizons, but ranging to 45 percent in these horizons in some pedons; 0 to 5 percent, by volume, in the Bt horizon

Size of rock fragments: Cobbles and stones in the A and E horizons; mostly quartz gravel in the Bt horizon

A or Ap horizon:

Hue—5YR to 2.5Y

Value—2 to 6

Chroma—2 to 8

Texture—sandy clay loam or sandy loam in the fine-earth fraction

E horizon (if it occurs):

Hue—5YR to 2.5Y

Value—5 to 7

Chroma—3 to 6

Texture—sandy loam, fine sandy loam, silt loam, loam, or loamy sand in the fine-earth fraction

BE or BA horizon (if it occurs):

Hue—5YR to 10YR

Value—3 to 6

Chroma—2 to 8

Texture—fine sandy loam, sandy loam, loam, sandy clay loam, clay loam, or silty clay loam

Bt horizon:

Hue—2.5YR to 7.5YR

Value—4 to 6

Chroma—3 to 8

Mottles—shades of red, brown, or yellow

Texture—silty clay loam, clay loam, sandy clay, silty clay, or clay

BC horizon (if it occurs):

Hue—2.5YR to 10YR

Value—3 to 6

Chroma—2 to 8

Mottles—in some pedons; horizon is mottled in shades of red, yellow, brown, or gray or has mottles in shades of red, yellow, or brown

Texture—sandy clay loam, loam, clay loam, silty clay loam, sandy clay, silty clay, or clay

C horizon (if it occurs):

Hue—horizon has hue of 2.5YR to 10YR or is multicolored

Value—3 to 6

Chroma—2 to 8

Mottles—in some pedons; horizon is mottled in shades of red, yellow, brown, or gray or has mottles in shades of red, yellow, brown, or gray

Texture—variable

McQueen Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow

Landform: River or stream valleys

Landscape position: Broad stream terraces

Parent material: Old alluvium

Slope range: 1 to 6 percent

Classification: Clayey, mixed, thermic Typic Hapludults

Typical Pedon

McQueen loam, 1 to 6 percent slopes; 0.9 mile south of Mangum on Secondary Road 1170, about 30 feet west of the road, in a field; USGS Mangum quadrangle; lat. 35 degrees 06 minutes 44 seconds N. and long. 79 degrees 59 minutes 21 seconds W.

Ap—0 to 5 inches; brown (10YR 4/3) loam; weak medium granular structure; friable; many fine and few medium roots; slightly acid; abrupt smooth boundary.

Bt1—5 to 9 inches; yellowish red (5YR 5/6) clay loam; moderate medium subangular blocky structure; friable; common fine and few coarse roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—9 to 21 inches; yellowish red (5YR 4/6) clay; common medium prominent red (2.5YR 4/6) and yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—21 to 28 inches; yellowish red (5YR 5/6) silty clay; common medium prominent dark yellowish brown (10YR 4/6) and few fine prominent reddish brown (7.5YR 6/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

- Bt4—28 to 55 inches; red (2.5YR 4/8) clay; common medium prominent brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.
- BC—55 to 62 inches; red (2.5YR 4/8) clay loam; common medium prominent brownish yellow (10YR 6/8) mottles; weak medium subangular blocky structure; friable; very strongly acid.

Range in Characteristics

Thickness of solum: 50 to 80 inches or more

Depth to bedrock: Greater than 60 inches

Reaction: Extremely acid to slightly acid in the A horizon; extremely acid to strongly acid in the lower horizons

Content and size of rock fragments: Less than 5 percent, by volume, in the A and B horizons; mostly quartz gravel

A or Ap horizon:

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—2 to 6

Texture—loam

Bt horizon (upper part):

Hue—2.5YR or 5YR

Value—4 or 5

Chroma—6 to 8

Texture—clay loam, silty clay loam, silty clay, or clay

Bt horizon (lower part):

Hue—2.5YR to 7.5YR

Value—4 or 5

Chroma—6 to 8

Mottles—shades of yellow, brown, or red

Texture—clay loam, silty clay loam, silty clay, or clay

BC horizon (if it occurs):

Hue—2.5YR or 7.5YR

Value—4 or 5

Chroma—6 to 8

Mottles—shades of red, yellow, or brown

Texture—sandy loam, sandy clay loam, silty clay loam, or clay loam

C horizon:

Hue—7.5YR or 10YR

Value—4 to 7

Chroma—4 to 8

Mottles—in some pedons; horizon is mottled in shades of yellow or brown

Texture—loamy sand to clay loam or the gravelly analogs of these textures

Norfolk Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Uplands of the Coastal Plain

Landscape position: Broad ridges

Parent material: Unconsolidated marine sediments

Slope range: 0 to 6 percent

Classification: Fine-loamy, siliceous, thermic Typic Kandudults

Typical Pedon

Norfolk loamy sand, 0 to 2 percent slopes (fig. 15); 1.9 miles south of Rockingham on U.S. Highway 1, approximately 0.5 mile west on Secondary Road 1108, about 450 feet north, in a cultivated field; USGS Rockingham quadrangle; lat. 34 degrees 54 minutes 14 seconds N. and long. 79 degrees 48 minutes 20 seconds W.

- Ap—0 to 8 inches; brown (10YR 5/3) loamy sand; weak medium granular structure; very friable; few fine and medium roots; slightly acid; abrupt smooth boundary.
- E—8 to 13 inches; light yellowish brown (10YR 6/4) loamy sand; weak medium granular structure; very friable; few fine roots; moderately acid; clear wavy boundary.
- BE—13 to 16 inches; brownish yellow (10YR 6/6) sandy loam; weak medium subangular blocky structure; friable; strongly acid; clear wavy boundary.
- Bt1—16 to 31 inches; yellowish brown (10YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.
- Bt2—31 to 45 inches; strong brown (7.5YR 5/8) sandy clay loam; common medium prominent red (2.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.
- Bt3—45 to 64 inches; strong brown (7.5YR 5/8) sandy clay loam; common medium faint strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few sand grains coated and bridged with clay; 4 percent quartz pebbles, by volume; strongly acid; gradual wavy boundary.
- Bt4—64 to 68 inches; 40 percent yellowish brown (10YR 5/8), 35 percent strong brown (7.5YR 5/8), 15 percent red (2.5YR 5/8), and 10 percent very pale brown (10YR 7/4) sandy clay loam; weak medium subangular blocky structure; friable; few sand grains coated and bridged with clay; yellowish brown, strong brown, and red areas are iron accumulations and very pale brown areas are iron depletions; strongly acid; gradual wavy boundary.
- Bt5—68 to 75 inches; 40 percent yellowish brown (10YR

5/8), 30 percent strong brown (7.5YR 5/8), 15 percent red (2.5YR 5/8), and 15 percent light gray (10YR 7/2) sandy clay loam; weak medium subangular blocky structure; friable; few sand grains coated and bridged with clay; yellowish brown, strong brown, and red areas are iron accumulations and light gray areas are iron depletions; strongly acid.

Range in Characteristics

Thickness of solum: Greater than 60 inches

Depth to bedrock: Greater than 60 inches

Reaction: Extremely acid to slightly acid in the A and E horizons; extremely acid to strongly acid in the B and C horizons

Content and size of rock fragments: Less than 5 percent, by volume, throughout the profile; mostly quartz gravel

A or Ap horizon:

Hue—10YR or 2.5Y

Value—4 to 7

Chroma—1 to 4

Texture—loamy sand

E horizon:

Hue—10YR or 2.5Y

Value—4 to 7

Chroma—2 to 6

Texture—sand, fine sand, loamy fine sand, loamy sand, sandy loam, or fine sandy loam

BE horizon (if it occurs):

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—3 to 8

Texture—sandy loam or fine sandy loam

Bt horizon:

Hue—7.5YR to 2.5Y

Value—5 to 8

Chroma—3 to 8

Mottles—in some pedons; horizon is mottled or has mottles in shades of yellow, brown, or red

Redoximorphic features—in some pedons below a depth of 48 inches; iron accumulations in shades of yellow, brown, or red and iron depletions in shades of white, gray, or yellow

Texture—dominantly sandy loam, fine sandy loam, sandy clay loam, or clay loam; layers of sandy clay or clay below a depth of 40 inches in some pedons

BC horizon (if it occurs):

Hue—5YR to 2.5Y

Value—4 to 7

Chroma—1 to 8

Mottles—in some pedons; horizon is mottled or has mottles in shades of yellow, brown, or red

Redoximorphic features—in some pedons; iron accumulations in shades of yellow, brown, or red and iron depletions in shades of white, gray, or yellow

Texture—sandy loam, fine sandy loam, sandy clay loam, clay loam, sandy clay, or clay

C horizon (if it occurs):

Hue—2.5YR to 5Y

Value—4 to 8

Chroma—1 to 8

Mottles—in some pedons; horizon is mottled or has mottles in shades of yellow, brown, or red

Redoximorphic features—in some pedons; iron accumulations in shades of yellow, brown, or red and iron depletions in shades of white, gray, or yellow

Texture—sandy to clayey

Orangeburg Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Uplands of the Coastal Plain

Landscape position: Broad ridges

Parent material: Unconsolidated marine sediments

Slope range: 0 to 6 percent

Classification: Fine-loamy, siliceous, thermic Typic Kandiodults

Typical Pedon

Orangeburg loamy sand, 0 to 2 percent slopes; 0.4 mile southwest of Cordova on Secondary Road 1103 from Secondary Road 1109, about 0.3 mile northwest on a farm road, 100 feet southwest of the farm road, in a cultivated field; USGS Rockingham quadrangle; lat. 34 degrees 54 minutes 25 seconds N. and long. 79 degrees 49 minutes 53 seconds W.

Ap—0 to 6 inches; brown (7.5YR 4/4) loamy sand; weak medium granular structure; very friable; common fine and medium roots; moderately acid; abrupt smooth boundary.

Bt1—6 to 16 inches; yellowish red (5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; few fine roots; few sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.

Bt2—16 to 54 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; few sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

Bt3—54 to 66 inches; red (2.5YR 4/8) sandy clay loam; common fine distinct reddish brown (5YR 4/4) mottles; weak medium subangular blocky structure;

friable; few fine roots; few sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

BC—66 to 80 inches; red (2.5YR 4/8) sandy loam; weak medium subangular blocky structure; friable; very strongly acid.

Range in Characteristics

Thickness of solum: 70 to 120 inches

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid to slightly acid in the A horizon; very strongly acid to moderately acid in the Bt1 horizon; very strongly acid or strongly acid in the lower horizons

A or Ap horizon:

Hue—5YR to 10YR

Value—3 to 5

Chroma—2 to 6

Texture—loamy sand

E horizon (if it occurs):

Hue—7.5YR or 10YR

Value—5 or 6

Chroma—3 to 6

Texture—sand or loamy sand

BA horizon (if it occurs):

Hue—2.5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Texture—sandy loam, fine sandy loam, or sandy clay loam

Bt horizon:

Hue—2.5YR or 5YR

Value—4 or 5

Chroma—6 or 8

Mottles—in some pedons in the lower part of the horizon; shades of brown

Texture—sandy clay loam in the upper part of the horizon and sandy clay loam or sandy clay in the lower part

BC horizon (if it occurs):

Hue—2.5YR to 7.5YR

Value—4 or 5

Chroma—6 or 8

Mottles—in some pedons; shades of brown

Texture—sandy loam, sandy clay loam, or sandy clay

Pacolet Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Piedmont uplands

Landscape position: Narrow ridges and side slopes

Parent material: Residuum weathered from felsic rock, such as granite

Slope range: 8 to 35 percent

Classification: Clayey, kaolinitic, thermic Typic Kanhapludults

Typical Pedon

Pacolet gravelly sandy loam, 15 to 35 percent slopes; 2.2 miles southwest of Holly Grove on Secondary Road 1143, about 0.7 mile west on Secondary Road 1142, about 1.5 miles west on Secondary Road 1141 to a power line, 150 feet southeast along the power line and 20 feet west, in woods; USGS Lilesville quadrangle; lat. 34 degrees 59 minutes 39 seconds N. and long. 79 degrees 52 minutes 32 seconds W.

A—0 to 2 inches; brown (10YR 4/3) gravelly sandy loam; moderate medium granular structure; friable; common fine, medium, and coarse roots; 15 percent pebbles, by volume; very strongly acid; clear wavy boundary.

E—2 to 7 inches; brown (7.5YR 5/4) gravelly sandy loam; moderate medium granular structure; friable; common fine, medium, and coarse roots; 15 percent pebbles, by volume; very strongly acid; gradual wavy boundary.

Bt1—7 to 11 inches; red (2.5YR 4/8) sandy clay; moderate medium subangular blocky structure; firm; common fine and medium and few coarse roots; few distinct clay films on faces of peds; 5 percent pebbles, by volume; very strongly acid; gradual wavy boundary.

Bt2—11 to 22 inches; red (2.5YR 4/6) sandy clay; moderate medium subangular blocky structure; firm; common fine and medium and few coarse roots; few distinct clay films on faces of peds; 5 percent pebbles, by volume; very strongly acid; gradual wavy boundary.

Bt3—22 to 25 inches; red (2.5YR 4/6) sandy clay; moderate medium subangular blocky structure; firm; common fine and medium and few coarse roots; few distinct clay films on faces of peds; common fine flakes of mica; 5 percent pebbles, by volume; very strongly acid; gradual wavy boundary.

BC—25 to 36 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; common fine flakes of mica; 5 percent pebbles, by volume; very strongly acid; gradual wavy boundary.

C—36 to 60 inches; multicolored sandy clay loam saprolite; massive; friable; common fine flakes of

mica; 10 percent pebbles, by volume; very strongly acid.

Range in Characteristics

Thickness of solum: 20 to 40 inches

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid to slightly acid in the A horizon; very strongly acid to moderately acid in the lower horizons

Content and size of rock fragments: 0 to 35 percent, by volume, in the A and E horizons and 0 to 15 percent in the Bt horizon; mostly quartz gravel

A or Ap horizon:

Hue—5YR to 10YR

Value—3 to 5

Chroma—1 to 4

Texture—sandy loam in the fine-earth fraction

E horizon (if it occurs):

Hue—5YR to 10YR

Value—4 to 6

Chroma—3 to 8

Texture—loamy sand, sandy loam, fine sandy loam, or loam in the fine-earth fraction

BA or BE horizon (if it occurs):

Hue—2.5YR to 10YR

Value—4 or 5

Chroma—3 to 8

Texture—loam, sandy clay loam, or clay loam

Bt horizon:

Hue—10R or 2.5YR

Value—4 or 5

Chroma—6 or 8

Mottles—in some pedons; shades of yellow or brown

Texture—clay loam, sandy clay, or clay

BC horizon:

Hue—10R to 5YR

Value—4 or 5

Chroma—6 or 8

Mottles—in some pedons; horizon is mottled in shades of yellow, brown, or red or has mottles in shades of yellow or brown

Texture—sandy loam, loam, sandy clay loam, or clay loam

C horizon:

Hue—horizon has hue of 10R to 5YR or is multicolored

Value—4 or 5

Chroma—6 or 8

Mottles—in some pedons; shades of yellow or brown

Texture—loamy

Paxville Series

Depth class: Very deep

Drainage class: Very poorly drained

Permeability: Moderate

Landform: Uplands of the Sandhills and Coastal Plain

Landscape position: Lower, broad upland flats

Parent material: Unconsolidated marine sediments

Slope range: 0 to 2 percent

Classification: Fine-loamy, siliceous, thermic Typic Umbraquults

Typical Pedon

Paxville fine sandy loam, 0 to 2 percent slopes; 5.0 miles northeast of Hamlet on N.C. Highway 177, about 2.7 miles south and east on Secondary Road 1607 to a woodland road, 100 feet north on the road and 100 feet west, in woods; USGS Marston quadrangle; lat. 34 degrees 54 minutes 52 seconds N. and long. 79 degrees 37 minutes 04 seconds W.

A—0 to 12 inches; black (10YR 2/1) fine sandy loam; weak medium granular structure; very friable; many fine, medium, and coarse roots; very strongly acid; clear smooth boundary.

Btg1—12 to 18 inches; gray (10YR 5/1) sandy clay loam; weak medium subangular blocky structure; friable; many fine and medium and common coarse roots; few sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

Btg2—18 to 35 inches; gray (10YR 5/1) sandy clay loam; weak medium subangular blocky structure; friable; common fine, medium, and coarse roots; few sand grains coated and bridged with clay; few medium distinct brownish yellow (10YR 6/6) masses of iron accumulation with clear boundaries in the matrix; very strongly acid; gradual wavy boundary.

Btg3—35 to 43 inches; light gray (10YR 6/1) sandy clay loam; weak medium subangular blocky structure; friable; few fine, medium, and coarse roots; few sand grains coated and bridged with clay; common coarse distinct brownish yellow (10YR 6/6) masses of iron accumulation with clear boundaries in the matrix; very strongly acid; gradual wavy boundary.

BCg—43 to 50 inches; light gray (10YR 6/1) sandy loam; massive; friable; few fine and medium roots; common medium distinct brownish yellow (10YR 6/6) masses of iron accumulation with clear boundaries in the matrix; very strongly acid; gradual wavy boundary.

Cg—50 to 60 inches; light gray (10YR 7/1) sandy clay loam that has pockets of sandy clay; massive; firm; common coarse distinct reddish yellow (7.5YR 6/8) masses of iron accumulation with clear boundaries in the matrix; very strongly acid.

Range in Characteristics

Thickness of solum: 40 to more than 60 inches

Depth to bedrock: Greater than 60 inches

Reaction: Extremely acid to slightly acid in the A horizon;
extremely acid to strongly acid in the lower horizons

A horizon:

Hue—horizon has hue of 10YR or is neutral in hue

Value—2 or 3

Chroma—0 to 2

Texture—fine sandy loam

E or Eg horizon (if it occurs):

Hue—10YR

Value—3 to 6

Chroma—1 or 2

Redoximorphic features—iron depletions in shades of gray or white and iron accumulations in shades of yellow, brown, or red

Texture—loamy fine sand, loamy sand, sandy loam, fine sandy loam, or loam

Btg horizon:

Hue—horizon has hue of 10YR or 2.5Y or is neutral in hue

Value—3 to 7

Chroma—0 to 2

Redoximorphic features—iron accumulations in shades of yellow, brown, or red

Texture—dominantly fine sandy loam, sandy loam, loam, clay loam, or sandy clay loam; horizons of sandy clay less than 6 inches thick in some pedons

BC or BCg horizon:

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—3 to 7

Chroma—0 to 3

Redoximorphic features—iron depletions in shades of gray or white and iron accumulations in shades of yellow, brown, or red

Texture—loamy sand, sandy loam, coarse sandy loam, fine sandy loam, or sandy clay loam

C or Cg horizon:

Hue—horizon has hue of 10YR to 5Y, 5GY, or 5G or is neutral in hue

Value—4 to 7

Chroma—0 to 3

Redoximorphic features—iron depletions in shades of gray or white and iron accumulations in shades of yellow, brown, or red

Texture—variable; ranging from sandy to loamy stratified material

Peawick Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Very slow

Landform: River or stream valleys

Landscape position: Broad stream terraces

Parent material: Old alluvium

Slope range: 0 to 6 percent

Classification: Clayey, mixed, thermic Aquic Hapludults

Typical Pedon

Peawick fine sandy loam, 2 to 6 percent slopes (fig. 16); 0.7 mile south of Mangum on Secondary Road 1170, about 30 feet west of the road, in a cultivated field; USGS Mangum quadrangle; lat. 35 degrees 06 minutes 53 seconds N. and long. 79 degrees 59 minutes 14 seconds W.

Ap—0 to 7 inches; brown (10YR 5/3) fine sandy loam; weak medium granular structure; very friable; common fine roots; slightly acid; abrupt smooth boundary.

BE—7 to 13 inches; olive yellow (2.5Y 6/6) loam; weak medium subangular blocky structure; friable; few fine and medium roots; strongly acid; clear wavy boundary.

Bt1—13 to 20 inches; brownish yellow (10YR 6/6) clay loam; few medium prominent yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine and medium roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—20 to 26 inches; brownish yellow (10YR 6/6) clay; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; common medium prominent red (2.5YR 5/8) and few medium distinct strong brown (7.5YR 5/8) masses of iron accumulation with clear boundaries in the matrix and few medium distinct light gray (10YR 7/2) irregularly shaped iron depletions with clear boundaries in the matrix; very strongly acid; gradual wavy boundary.

Bt3—26 to 47 inches; 45 percent strong brown (7.5YR 5/8), 30 percent light gray (10YR 7/1), and 25 percent red (10R 4/8) clay; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; red areas are iron accumulations and light gray areas are iron depletions; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bt4—47 to 55 inches; 30 percent strong brown (7.5YR 5/8), 30 percent light gray (10YR 7/1), 20 percent red (10R 4/8), and 20 percent brownish yellow (10YR 6/8)

clay; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of pedis; red and brownish yellow areas are iron accumulations and light gray areas are iron depletions; common fine flakes of mica; very strongly acid; gradual wavy boundary.

BC—55 to 75 inches; 45 percent strong brown (7.5YR 5/8), 30 percent light gray (10YR 7/1), and 25 percent red (10R 4/8) clay that has pockets of sandy clay loam; massive; firm; red areas are iron accumulations and light gray areas are iron depletions; very strongly acid.

Range in Characteristics

Thickness of solum: Greater than 60 inches

Depth to bedrock: Greater than 60 inches

Reaction: Extremely acid to slightly acid in the A horizon; extremely acid to strongly acid in the lower horizons

Content and size of rock fragments: 0 to 14 percent, by volume; mostly quartz gravel

A or Ap horizon (if it occurs):

Hue—10YR to 5Y

Value—2 to 6

Chroma—1 to 4

Texture—fine sandy loam or silt loam

E horizon (if it occurs):

Hue—10YR to 5Y

Value—5 to 7

Chroma—2 to 4

Texture—fine sandy loam, loam, or silt loam

BE horizon (if it occurs):

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—4 to 8

Texture—loam, silt loam, silty clay loam, or clay loam

Bt horizon (upper part):

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; shades of yellow, brown, or red

Redoximorphic features—in some pedons; iron depletions in shades of white or gray and iron accumulations in shades of yellow, brown, or red

Texture—clay loam, silty clay loam, silty clay, or clay

Bt horizon (lower part):

Hue—horizon has hue of 10YR to 5Y or is multicolored

Value—5 to 7

Chroma—3 to 8

Redoximorphic features—in some pedons; iron

depletions in shades of white or gray and iron accumulations in shades of yellow, brown, or red
Texture—clay loam, silty clay loam, silty clay, or clay

Btg horizon (if it occurs):

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—5 to 7

Chroma—0 to 2

Redoximorphic features—in some pedons; iron accumulations in shades of yellow, brown, or red

Texture—clay loam, silty clay loam, silty clay, or clay

BC horizon (if it occurs):

Hue—10YR to 5Y

Value—5 to 7

Chroma—3 to 8

Redoximorphic features—in some pedons; iron depletions in shades of white or gray and iron accumulations in shades of yellow, brown, or red

Texture—loam, silt loam, sandy clay loam, clay loam, silty clay loam, silty clay, or clay

BCg horizon (if it occurs):

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—5 to 7

Chroma—0 to 2

Redoximorphic features—in some pedons; iron accumulations in shades of yellow, brown, or red

Texture—loam, silt loam, sandy clay loam, clay loam, silty clay loam, silty clay, or clay

Cg horizon (if it occurs):

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—4 to 7

Chroma—0 to 2

Redoximorphic features—in some pedons; iron accumulations in shades of yellow, brown, or red

Texture—fine sandy loam to clay

Pelion Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderately slow or slow

Landform: Uplands of the Sandhills and Coastal Plain

Landscape position: Broad ridges and side slopes

Parent material: Unconsolidated marine sediments

Slope range: 0 to 15 percent

Classification: Fine-loamy, siliceous, thermic Aquic Kanhapludults

Typical Pedon

Pelion loamy sand, 2 to 8 percent slopes (fig. 17); 0.2

mile southwest of Marston on U.S. Highway 1 to Secondary Road 1001, about 0.1 mile south on Secondary Road 1001 to a woodland road (beside the railroad), 0.4 mile southwest on the woodland road, 1.8 miles south on the road, 20 feet east of the road, in woods; USGS Marston quadrangle; lat. 34 degrees 57 minutes 31 seconds N. and long. 79 degrees 35 minutes 29 seconds W.

- A—0 to 2 inches; grayish brown (10YR 5/2) loamy sand; weak medium granular structure; loose; many fine and medium roots; 1 percent quartz pebbles, by volume; very strongly acid; abrupt smooth boundary.
- E—2 to 13 inches; light yellowish brown (10YR 6/4) loamy sand; weak medium granular structure; loose; many fine and medium roots; 1 percent quartz pebbles, by volume; very strongly acid; clear wavy boundary.
- Bt1—13 to 29 inches; brownish yellow (10YR 6/8) sandy clay loam; few fine prominent yellowish red (5YR 4/8) mottles; weak medium granular structure; friable; many fine and medium roots; 1 percent quartz pebbles, by volume; very strongly acid; gradual wavy boundary.
- Bt2—29 to 41 inches; brownish yellow (10YR 6/8) sandy clay loam; moderate medium subangular blocky structure; friable; brittle in 10 percent of the mass; few fine roots; few sand grains coated and bridged with clay; few fine distinct light gray (10YR 7/1) irregularly shaped iron depletions with clear boundaries in the matrix and common fine prominent yellowish red (5YR 4/8) masses of iron accumulation with clear boundaries in the matrix; 1 percent quartz pebbles, by volume; very strongly acid; gradual wavy boundary.
- BC—41 to 70 inches; brownish yellow (10YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; few sand grains coated and bridged with clay; common fine prominent red (2.5YR 4/8) masses of iron accumulation with clear boundaries in the matrix and common medium distinct light gray (10YR 6/1) irregularly shaped iron depletions with clear boundaries in the matrix; 1 percent quartz pebbles, by volume; very strongly acid; gradual wavy boundary.
- C—70 to 75 inches; reddish yellow (7.5YR 6/8) sandy loam; massive; very friable; few fine distinct brownish yellow (10YR 6/8) irregularly shaped iron depletions with diffuse boundaries in the matrix; very strongly acid.

Range in Characteristics

Thickness of solum: 40 to more than 72 inches

Depth to bedrock: Greater than 60 inches

Reaction: Extremely acid to slightly acid in the A and E horizons; extremely acid to strongly acid in the lower horizons

Content and size of rock fragments: 0 to 14 percent, by volume, throughout the profile; mostly quartz gravel

Brittleness: 10 to 60 percent in some part of the B horizon

A or Ap horizon:

Hue—horizon has hue of 10YR to 2.5Y or is neutral in hue

Value—3 to 5

Chroma—0 to 3

Texture—loamy sand

E horizon:

Hue—horizon has hue of 10YR or 2.5Y or is neutral in hue

Value—4 to 8

Chroma—0 to 4

Texture—sand, loamy sand, or sandy loam

Bt horizon (upper part):

Hue—7.5YR to 2.5Y

Value—5 to 8

Chroma—6 or 8

Mottles—in some pedons; horizon is mottled in shades of red, yellow, or brown or has mottles in these shades

Redoximorphic features—in some pedons; iron accumulations in shades of red, yellow, or brown and iron depletions in shades of gray or white

Texture—sandy loam or sandy clay loam

Bt horizon (lower part):

Hue—7.5YR to 2.5Y

Value—5 to 8

Chroma—6 or 8

Redoximorphic features—in some pedons; iron accumulations in shades of red, yellow, or brown and iron depletions in shades of gray or white

Texture—sandy clay loam, sandy clay, or clay

BC horizon:

Hue—2.5YR to 2.5Y

Value—4 to 8

Chroma—1 to 8

Redoximorphic features—in some pedons; iron accumulations in shades of red, yellow, or brown and iron depletions in shades of gray or white

Texture—dominantly sandy loam or sandy clay loam; strata of clay or sandy clay in some pedons

C or 2C horizon (if it occurs):

Hue—2.5YR to 2.5Y

Value—4 to 8

Chroma—1 to 8

Redoximorphic features—in some pedons; iron accumulations in shades of red, yellow, or brown and iron depletions in shades of gray or white

Texture—variable; material ranges from sandy to clayey or is stratified

Pinkston Series

Depth class: Moderately deep

Drainage class: Well drained to excessively drained

Permeability: Moderately rapid

Landform: Piedmont uplands

Landscape position: Ridges and side slopes

Parent material: Residuum weathered from Triassic rock, such as sandstone and siltstone

Slope range: 4 to 15 percent

Classification: Coarse-loamy, mixed, thermic Ruptic-Ultic Dystrochrepts

Typical Pedon

Pinkston fine sandy loam, 4 to 15 percent slopes, very stony; 3.6 miles east of Exway on Secondary Road 1153, about 210 feet south of the road, in woods; USGS Harrisville quadrangle; lat. 35 degrees 10 minutes 44 seconds N. and long. 79 degrees 48 minutes 51 seconds W.

A—0 to 2 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium granular structure; very friable; many fine, medium, and coarse roots; 5 percent pebbles, 5 percent cobbles, and 5 percent stones, by volume; strongly acid; clear smooth boundary.

Bw/Bt—2 to 16 inches; strong brown (7.5YR 5/6) fine sandy loam (Bw part) that has 40 percent irregularly shaped bodies of silty clay loam (Bt part); weak medium subangular blocky structure; very friable; many fine, medium, and coarse roots; 10 percent pebbles, by volume; strongly acid; clear smooth boundary.

BC—16 to 20 inches; strong brown (7.5YR 5/6) silt loam; common coarse distinct reddish brown (5YR 4/4) mottles; massive; very friable; 5 percent pebbles, by volume; very strongly acid; clear wavy boundary.

C—20 to 32 inches; dark reddish brown (5YR 3/4) silt loam; common coarse prominent light gray (10YR 7/2) streaks; massive; very friable; 10 percent pebbles, by volume; very strongly acid; clear wavy boundary.

Cr—32 to 39 inches; dark reddish brown (5YR 3/4) soft, weathered sandstone bedrock that can be dug with difficulty with a spade; common medium prominent light gray (10YR 7/2) streaks.

R—39 inches; hard, unweathered sandstone bedrock.

Range in Characteristics

Thickness of solum: 12 to 30 inches

Depth to bedrock: 20 to 36 inches to soft, weathered bedrock; 20 to 40 inches to hard, unweathered bedrock

Reaction: Very strongly acid or strongly acid throughout the profile

Content and size of rock fragments: 1 to 34 percent, by volume, in the solum and 10 to 50 percent in the C horizon; mostly gravel

A horizon:

Hue—5YR to 2.5Y

Value—3 to 5

Chroma—1 to 4

Texture—fine sandy loam in the fine-earth fraction

E horizon (if it occurs):

Hue—2.5YR to 2.5Y

Value—4 to 6

Chroma—2 to 6

Texture—fine sandy loam, sandy loam, very fine sandy loam, loam, or silt loam in the fine-earth fraction

Bw/Bt horizon:

Hue—2.5YR to 10YR

Value—3 to 7

Chroma—2 to 8

Mottles—in some pedons; shades of yellow or brown

Texture (Bw part)—fine sandy loam, sandy loam, loam, very fine sandy loam, or silt loam

Texture (Bt part)—sandy clay loam, clay loam, or silty clay loam in the fine-earth fraction

BC horizon (if it occurs):

Hue—2.5YR to 10YR

Value—3 to 7

Chroma—2 to 8

Mottles—in some pedons; shades of yellow or brown

Texture—fine sandy loam, sandy loam, loam, very fine sandy loam, silt loam, sandy clay loam, clay loam, or silty clay loam in the fine-earth fraction

C horizon:

Color—horizon is mottled, is streaked, or has variegated shades of brown, pink, purple, red, white, or yellow

Texture—very fine sand, fine sandy loam, sandy loam, loam, or silt loam in the fine-earth fraction

Cr horizon:

Color—multicolored or variegated

Texture—soft, weathered sandstone or siltstone

R horizon:

Texture—hard, unweathered sandstone or siltstone

Riverview Series*Depth class:* Very deep*Drainage class:* Well drained*Permeability:* Moderate*Landform:* River or stream valleys*Landscape position:* Flood plains*Parent material:* Alluvium*Slope range:* 0 to 2 percent*Classification:* Fine-loamy, mixed, thermic Fluventic
Dystrochrepts**Typical Pedon**

Riverview loam, 0 to 2 percent slopes, occasionally flooded; 3.5 miles east of Mangum on Secondary Road 1148, about 0.4 mile south of Secondary Road 1148 on a dirt road, 300 feet east along the Pee Dee River, 150 feet north of the river; USGS Mangum quadrangle; lat. 35 degrees 07 minutes 07 seconds N. and long. 79 degrees 55 minutes 39 seconds W.

- Ap—0 to 11 inches; dark yellowish brown (10YR 4/4) loam; weak medium granular structure; very friable; common fine and medium roots; slightly acid; abrupt smooth boundary.
- Bw1—11 to 36 inches; yellowish brown (10YR 5/8) loam; common medium distinct dark reddish brown (5YR 3/4) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine brown and black manganese concretions; common fine flakes of mica; moderately acid; gradual wavy boundary.
- Bw2—36 to 55 inches; yellowish brown (10YR 5/8) loam; weak medium subangular blocky structure; friable; few fine brown and black manganese concretions; common medium prominent red (10R 4/6) masses of iron accumulation with diffuse boundaries in the matrix and few fine distinct light yellowish brown (10YR 6/4) irregularly shaped iron depletions with clear boundaries in the matrix; common fine flakes of mica; moderately acid; gradual wavy boundary.
- C—55 to 62 inches; yellowish brown (10YR 5/4) sandy loam that has strata of silty clay loam; massive; friable; few fine brown and black manganese concretions; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation with diffuse boundaries in the matrix; few fine flakes of mica; moderately acid.

Range in Characteristics*Thickness of solum:* 24 to 60 inches*Depth to bedrock:* Greater than 60 inches*Reaction:* Very strongly acid to slightly acid in the A horizon; very strongly acid to moderately acid in the lower horizons*A or Ap horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—2 to 6

Texture—loam

Bw horizon:

Color—hue of 7.5YR, value of 4 to 6, and chroma of 3 to 8; hue of 10YR, value of 3 to 5, and chroma of 3 to 8; or in some pedons hue of 5YR, value of 4 or 5, and chroma of 3 or 4

Mottles—in some pedons; shades of yellow, brown, or red

Redoximorphic features—in some pedons below a depth of 24 inches; iron accumulations in shades of yellow, brown, or red and iron depletions in shades of white or gray

Texture—fine sandy loam, loam, silt loam, sandy clay loam, silty clay loam, or clay loam

BC horizon (if it occurs):

Color—hue of 7.5YR, value of 4 to 6, and chroma of 3 to 8; hue of 10YR, value of 3 to 5, and chroma of 3 to 8; or in some pedons hue of 5YR, value of 4 or 5, and chroma of 3 or 4

Mottles—in some pedons; shades of yellow, brown, or red

Redoximorphic features—in some pedons below a depth of 24 inches; iron accumulations in shades of yellow, brown, or red and iron depletions in shades of white or gray

Texture—fine sandy loam, sandy loam, loam, or sandy clay loam

C horizon:

Hue—7.5YR or 10YR

Value—4 to 8

Chroma—4 to 8

Redoximorphic features—in some pedons below a depth of 24 inches; iron accumulations in shades of yellow, brown, or red and iron depletions in shades of white or gray

Texture—dominantly sand, loamy sand, loamy fine sand, fine sandy loam, sandy loam, or loam; strata of finer or coarser textured material in most pedons

Turbeville Series*Depth class:* Very deep*Drainage class:* Well drained*Permeability:* Moderate*Landform:* River or stream valleys and uplands of the Piedmont and Coastal Plain*Landscape position:* High stream terraces*Parent material:* Old alluvium

Slope range: 0 to 8 percent

Classification: Clayey, mixed, thermic Typic Kandiodults

Typical Pedon

Turbeville sandy loam, 2 to 8 percent slopes; 2.9 miles west of Rockingham on U.S. Highway 74, about 1.8 miles southwest on Secondary Road 1109 to a natural gas pipeline, 1,100 feet northwest along the pipeline, 50 feet northeast of the pipeline, in a field; USGS Rockingham quadrangle; lat. 34 degrees 56 minutes 13 seconds N. and long. 79 degrees 50 minutes 22 seconds W.

Ap—0 to 6 inches; reddish brown (5YR 4/4) sandy loam; weak medium granular structure; friable; many fine and common medium roots; very strongly acid; abrupt smooth boundary.

Bt1—6 to 10 inches; red (2.5YR 4/8) sandy clay; weak medium subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; 2 percent quartz pebbles, by volume; very strongly acid; clear wavy boundary.

Bt2—10 to 61 inches; red (2.5YR 4/8) clay; weak medium subangular blocky structure; friable; common fine roots; common distinct clay films on faces of peds; 5 percent quartz pebbles, by volume; very strongly acid; gradual wavy boundary.

Bt3—61 to 75 inches; red (2.5YR 4/8) sandy clay; few medium distinct reddish yellow (5YR 6/8) mottles; weak medium subangular blocky structure; friable; common distinct clay films on faces of peds; 2 percent quartz pebbles, by volume; very strongly acid.

Range in Characteristics

Thickness of solum: 60 inches or more

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid to slightly acid in the A horizon; very strongly acid or strongly acid in the lower horizons

Content and size of rock fragments: 0 to 14 percent in the control section and 0 to 34 percent below the control section; mostly quartz gravel in the control section

A or Ap horizon:

Hue—5YR to 10YR

Value—4 or 5

Chroma—2 to 4

Texture—sandy loam

E horizon (if it occurs):

Hue—5YR to 10YR

Value—5 to 7

Chroma—4 to 8

Texture—sandy loam, fine sandy loam, loam, or silt loam

BE or BA horizon (if it occurs):

Hue—2.5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Texture—fine sandy loam, loam, sandy clay loam, or clay loam

Bt horizon (upper part):

Hue—2.5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; shades of yellow, red, or brown

Texture—sandy clay loam, clay loam, sandy clay, or clay

Bt horizon (lower part):

Hue—10R to 5YR

Value—3 or 4

Chroma—4 to 8

Mottles—in some pedons; shades of red, yellow, or brown

Texture—sandy clay loam, clay loam, sandy clay, or clay

BC horizon (if it occurs):

Hue—10R to 10YR

Value—3 to 6

Chroma—4 to 8

Mottles—in some pedons; shades of red, yellow, or brown

Texture—sandy clay loam, clay loam, or sandy clay

Udorthents

Drainage class: Well drained to moderately well drained

Permeability: Rapid to slow

Landform: Uplands of the Piedmont, Sandhills, and Coastal Plain

Landscape position: Variable; commonly broad ridges in areas adjacent to major roads

Parent material: Fill areas—mixtures of natural soil excavated from uplands of the Sandhills, Coastal Plain, or Piedmont that include concrete, asphalt, rock fragments, wood, and glass in some areas; excavated areas—variable

Slope range: 0 to 15 percent

Classification: Udorthents

Typical Pedon

Udorthents consist of areas where the original soil has been altered by cutting, filling, and shaping. They include abandoned borrow areas, landfills, and cut and fill areas. A typical pedon is not given due to the variable nature of the soil material.

Range in Characteristics

Depth to bedrock: Excavated areas—24 to greater than 60 inches; fill areas—30 to greater than 60 inches
Reaction: Extremely acid to moderately acid
Content and size of rock fragments: Variable
Color: Hue of 10R to 2.5Y, value of 2 to 8, and chroma of 1 to 8
Texture: Sand to clay

Uwharrie Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Parent material: Residuum weathered from Carolina Slate rock, such as phyllite and schist
Slope range: 2 to 25 percent
Classification: Clayey, mixed, thermic Typic Hapludults

Typical Pedon

Uwharrie clay loam, 2 to 8 percent slopes, eroded (fig. 18); 8.0 miles southeast of Mangum on Secondary Road 1148, in a road cut to the east; USGS Mangum quadrangle; lat. 35 degrees 04 minutes 21 seconds N. and long. 79 degrees 53 minutes 50 seconds W.

Ap—0 to 6 inches; reddish yellow (7.5YR 6/6) clay loam; moderate medium granular structure; friable; many fine, medium, and coarse roots; very strongly acid; clear wavy boundary.

BA—6 to 12 inches; reddish yellow (7.5YR 6/6) silty clay loam; weak medium subangular blocky structure; friable; many fine, medium, and coarse roots; very strongly acid; clear wavy boundary.

Bt1—12 to 22 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; firm; many fine and medium and few coarse roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—22 to 50 inches; red (10R 4/6) clay; strong medium subangular blocky structure; firm; common fine and medium and few coarse roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

BC—50 to 62 inches; red (10R 4/6) silty clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; very strongly acid; gradual wavy boundary.

C—62 to 80 inches; weak red (10R 4/4) silt loam; massive; very friable; very strongly acid.

Range in Characteristics

Thickness of solum: 40 to more than 60 inches
Depth to bedrock: Greater than 60 inches
Reaction: Very strongly acid to slightly acid in the A horizon; very strongly acid to moderately acid in the lower horizons
Content and size of rock fragments: 0 to 10 percent, by volume, throughout the profile; mostly quartz gravel

A or Ap horizon:

Hue—5YR to 10YR
 Value—3 to 6
 Chroma—2 to 6
 Texture—clay loam or loam

E horizon (if it occurs):

Hue—5YR to 10YR
 Value—4 to 6
 Chroma—3 to 8
 Texture—loam or silt loam

BA or BE horizon (if it occurs):

Hue—2.5YR to 7.5YR
 Value—3 to 6
 Chroma—6 to 8
 Texture—loam, silt loam, clay loam, silty clay loam, or sandy clay loam

Bt horizon:

Hue—10R to 5YR
 Value—3 to 5
 Chroma—6 or 8
 Mottles—in some pedons; shades of brown or yellow
 Texture—clay loam, silty clay loam, silty clay, or clay

BC horizon:

Hue—10R to 5YR
 Value—4 or 5
 Chroma—6 or 8
 Mottles—in some pedons; horizon is mottled in shades of brown, yellow, red, or gray or has mottles in these shades
 Texture—silt loam, loam, silty clay loam, clay loam, silty clay, or clay

C horizon:

Hue—horizon has hue of 10R to 5YR or is multicolored
 Value—4 or 5
 Chroma—4 to 8
 Mottles—in some pedons; horizon is mottled in shades of brown, yellow, red, or gray or has mottles in these shades
 Texture—loamy material

Wakulla Series

Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Rapid

Landform: Uplands of the Sandhills and Coastal Plain

Landscape position: Ridges and side slopes

Parent material: Unconsolidated marine sediments

Slope range: 0 to 15 percent

Classification: Sandy, siliceous, thermic Psammentic
Hapludults

Typical Pedon

Wakulla sand in an area of Wakulla and Candor soils, 0 to 8 percent slopes; 2.0 miles northeast of Hamlet on Secondary Road 1623, about 1.1 miles east on Secondary Road 1607, about 0.5 mile north on a farm road, 0.2 mile east on a dirt trail in a clearcut area; USGS Marston quadrangle; lat. 34 degrees 55 minutes 13 seconds N. and long. 79 degrees 37 minutes 11 seconds W.

A—0 to 3 inches; brown (10YR 5/3) sand; single grained; loose; common fine and medium roots; very strongly acid; clear wavy boundary.

E—3 to 26 inches; brownish yellow (10YR 6/6) sand; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

Bt—26 to 39 inches; yellowish brown (10YR 5/8) loamy sand; weak medium granular structure; very friable; few fine roots; very strongly acid; gradual wavy boundary.

C1—39 to 53 inches; brownish yellow (10YR 6/8) sand; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

C2—53 to 70 inches; yellow (10YR 7/6) sand; few fine distinct strong brown (7.5YR 5/8) mottles; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

C3—70 to 85 inches; very pale brown (10YR 7/4) sand; common fine distinct strong brown (7.5YR 5/8) mottles; single grained; loose; very strongly acid.

Range in Characteristics

Thickness of solum: 28 to 60 inches

Depth to bedrock: Greater than 60 inches

Reaction: Very strongly acid to slightly acid in the A and E horizons; very strongly acid to moderately acid in the lower horizons

A or Ap horizon:

Hue—10YR

Value—4 or 5

Chroma—2 to 4

Texture—sand

E horizon:

Hue—10YR or 2.5Y

Value—4 to 7

Chroma—4 to 8

Texture—fine sand, sand, loamy fine sand, or loamy sand

Bt horizon:

Hue—5YR to 10YR

Value—4 to 6

Chroma—6 to 8

Texture—loamy sand or loamy fine sand

C horizon:

Hue—7.5YR or 10YR

Value—5 to 7

Chroma—1 to 8

Texture—sand, fine sand, or coarse sand

Other features—streaks, strata, or mottles in shades of yellow or brown in some pedons

Wynott Series

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Slow

Landform: Piedmont uplands

Landscape position: Ridges and side slopes

Parent material: Residuum weathered from mafic rock, such as gabbro and diabase

Slope range: 2 to 35 percent

Classification: Fine, mixed, thermic Typic Hapludalfs

Typical Pedon

Wynott fine sandy loam in an area of Cullen-Wynott complex, 15 to 35 percent slopes; 5.7 miles south of Rockingham on U.S. Highway 1, about 0.7 mile west on Secondary Road 1104, about 0.5 mile south on Secondary Road 1103, about 0.5 mile northwest on a dirt path, 285 feet north, in woods; USGS Diggs quadrangle; lat. 34 degrees 52 minutes 12 seconds N. and long. 79 degrees 51 minutes 20 seconds W.

A—0 to 2 inches; brown (10YR 5/3) fine sandy loam; weak medium granular structure; friable; many fine and common medium and coarse roots; moderately acid; clear wavy boundary.

E—2 to 5 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak medium granular structure; friable; common fine and medium and few coarse roots; strongly acid; gradual wavy boundary.

BE—5 to 10 inches; dark brown (7.5YR 4/4) loam; weak medium subangular blocky structure; friable; common fine and few medium and coarse roots; very strongly acid; clear wavy boundary.

Btss—10 to 22 inches; brown (7.5YR 4/4) clay; moderate medium subangular blocky structure; firm; common fine and few medium roots; common nonintersecting slickensides; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

C—22 to 27 inches; 50 percent reddish brown (5YR 4/4), 40 percent reddish yellow (7.5YR 6/6), and 10 percent light gray (10YR 7/2) loam; massive; friable; strongly acid; clear wavy boundary.

Cr—27 to 60 inches; multicolored soft, weathered gabbro bedrock that can be dug with difficulty with a spade.

Range in Characteristics

Thickness of solum: 20 to 40 inches

Depth to bedrock: 20 to 40 inches to soft, weathered bedrock; greater than 40 inches to hard, unweathered bedrock

Reaction: Very strongly acid to slightly acid throughout the profile

Content and size of rock fragments: 0 to 35 percent, by volume, in the A horizon and 0 to 40 percent in the B and C horizons; iron and manganese concretions and quartz gravel

A or Ap horizon:

Hue—7.5YR to 2.5Y

Value—3 to 6

Chroma—2 to 8

Texture—fine sandy loam in the fine-earth fraction

E horizon (if it occurs):

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—3 to 6

Texture—fine sandy loam, sandy loam, silt loam, or loam in the fine-earth fraction

BE or EB horizon (if it occurs):

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—3 to 6

Mottles—in some pedons; shades of brown or yellow

Texture—loam, silt loam, sandy loam, sandy clay loam, clay loam, or silty clay loam in the fine-earth fraction

Bt horizon:

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; shades of brown, yellow, or red

Texture—clay loam, silty clay, sandy clay, or clay in the fine-earth fraction

BC horizon (if it occurs):

Hue—horizon has hue of 7.5YR to 2.5Y or is multicolored

Value—4 to 6

Chroma—4 to 8

Mottles—in some pedons; horizon is mottled in shades of brown, yellow, black, gray, or white

Texture—sandy clay, sandy clay loam, clay loam, or loam in the fine-earth fraction

C horizon (if it occurs):

Color—multicolored

Mottles—in some pedons; horizon is mottled in shades of yellow, brown, black, gray, or white

Texture—variable; commonly sandy loam, fine sandy loam, loam, or silt loam in the fine-earth fraction

Cr horizon:

Color—multicolored

Texture—soft, weathered mafic bedrock that can be dug with difficulty with a spade

Formation of the Soils

This section describes the factors of soil formation as they relate to the soils of Richmond County and explains the major processes of soil horizon development.

Factors of Soil Formation

Soils are formed by processes of the environment acting upon geologic materials, such as metamorphic, igneous, and sedimentary rocks and fluvial stream sediments. The characteristics of a soil are determined by the combined influence of parent material, climate, plant and animal life, relief, and time. These five factors are responsible for profile development and the chemical properties that differentiate soils (5).

Parent Material

Parent material is the unconsolidated mass in which a soil forms. The character of this mass affects the kind of profile that develops and the degree of this development. In Richmond County, parent material is a major factor in determining what kind of soil forms and can be correlated to some degree to geologic formations. The general soil map can be used as an approximate guide to the geology of the county.

The general soil map units and the geologic material of their parent material are as follows:

The soils of the Ailey-Wakulla-Candor and Turbeville-Norfolk-Orangeburg general soil map units formed in predominantly unconsolidated marine sediments.

The soils of the Uwharrie-Badin and Badin-Goldston-Uwharrie general soil map units formed in residuum weathered from Carolina Slate rock (such as argillite, phyllite, and schist).

The soils of the Pacolet-Cullen general soil map unit formed in residuum weathered from felsic to mafic igneous rocks (such as granite and gabbro).

The soils of the Mayodan-Creedmoor general soil map unit formed in residuum weathered from Triassic sedimentary rocks (such as sandstone, shale, mudstone, and siltstone).

The soils of the Chewacla-Riverview and Johnston general soil map units formed in recent alluvium.

The soils of the Peawick-Hornsboro and Masada general soil map units formed in old alluvium.

Parent material is largely responsible for the chemical and mineralogical composition of soils and for the major differences among the soils of the county. Major differences in parent material, such as differences in texture, can be observed in the field. Less distinct differences, such as differences in mineralogical composition, can be determined only by careful laboratory analysis.

The parent material in Richmond County can be grouped into three broad classes—unconsolidated marine sediments, residuum, and alluvium.

The unconsolidated marine sediments are primarily in the eastern and southern parts of the county. The sediments vary in texture from sandy to loamy to clayey. Candor, Wakulla, Ailey, and Pelion soils formed in the sandy marine sediments. Norfolk, Orangeburg, and Paxville soils formed in the loamy sediments. Turbeville soils formed in the clayey sediments.

The residuum occurs mainly in the western part of the county and in areas adjacent to the Pee Dee River. The residuum parent material has three basic types of bedrock, namely Carolina Slate, Triassic sedimentary rock, and igneous rock. Uwharrie, Badin, and Goldston soils formed in the Carolina Slate bedrock. Mayodan, Creedmoor, Exway, and Pinkston soils formed in the Triassic sedimentary bedrock. Pacolet soils formed in igneous granite bedrock. Wynott, Cullen, and Enon soils formed in igneous gabbro bedrock.

The alluvium occurs throughout the county in areas along or near streams, creeks, and rivers. There are two different types of alluvium—old alluvium on river terraces and recent alluvium on flood plains. Turbeville, Masada, Davidson, McQueen, Peawick, and Hornsboro soils formed in old alluvium, mainly in the northwestern part of the county. Riverview, Chewacla, and Johnston soils formed in recent alluvium.

Climate

Climate, particularly precipitation and temperature, affects the physical, chemical, and biological relationships in the soil. It influences the rate at which rocks weather and organic matter decomposes. The amount of leaching in a soil is related to the amount of rainfall and the movement of water through the soil. The effects of climate

also control the kinds of plants and animals living in and on the soil. Temperature influences the kind and growth of organisms and the speed of chemical and physical reactions in the soil.

Richmond County has a warm, humid climate. The climate favors rapid chemical processes, which result in the decomposition of organic matter and the weathering of rocks. The effects of climate are reflected in the soils of Richmond County. Mild temperatures throughout the year and abundant rainfall have resulted in the depletion of organic matter and considerable leaching of soluble bases and oxidizing. Because variations in the climate are small, climate has probably not caused major local differences among soils. Climate has mainly affected the formation of soils in Richmond County by altering the parent material through changes in temperature and in the amount of precipitation and through influences on plant and animal life.

Plant and Animal Life

Plants and animals influence the formation and differentiation of soil horizons. The type and number of organisms in and on the soil are determined in part by climate and in part by the nature of the soil material, relief, and the age of the soil. Bacteria, fungi, and other micro-organisms aid in the weathering of rocks and in the decomposition of organic matter. The plants and animals that live on a soil are the primary source of organic material.

Plants largely determine the kinds and amounts of organic matter that are added to a soil under normal conditions and the way in which the organic matter is added. They also are important for the changes of base status and for the leaching process of a soil.

Animals convert complex compounds into simpler forms, add organic matter to the soil, and modify certain chemical and physical properties of the soil. In Richmond County most of the organic material accumulates on the surface. It is acted upon by micro-organisms, fungi, earthworms, and other forms of life and by direct chemical reaction. It is mixed with the uppermost mineral part of the soil by the activities of earthworms and other small invertebrates. Rodents have not significantly affected the formation of soils in the county.

Under the native forest of this county, not enough bases were brought to the surface by plants to counteract the effects of leaching. Generally, the soils of Richmond County developed under a forest of hardwoods and pine. Trees took up elements from the subsoil and added organic matter to the soil by depositing leaves, roots, twigs, and other plant remains on the surface. The material deposited on the surface was acted upon by organisms and underwent chemical reaction.

Organic material decomposes rapidly in the county because of the moderate temperatures, the abundant moisture supply, and the character of the organic material. It decays so rapidly that little of it accumulates in the soil.

Relief

Soils in the survey area range from nearly level to steep. Relief causes differences in internal drainage, surface runoff, soil temperature, and the extent of geologic erosion. Relief in Richmond County is primarily determined by geologic erosion, the kind of underlying bedrock, and the extent that the landscape is dissected by streams and rivers.

Relief affects surface runoff and thus the hazard of erosion. Runoff water can erode the soil and deposit sediments downslope or in streams. Generally, as slope increases the hazard of erosion increases. Geologic erosion normally results in thinner, less developed soils in areas on the steeper slopes. If ground cover is removed, accelerated erosion can remove soil material faster than it can form and result in a soil that is even thinner and less developed.

Some soils, however, are not deep or well developed even though in some areas they are not steep. Goldston soils have slopes ranging as low as 8 percent, but, because they formed from bedrock that weathers very slowly, only a shallow profile developed.

Relief affects natural soil drainage because it influences the amount of water that runs onto or off of the soil. Natural drainage is a quality of how well the soil removes excess water. Soils on the steeper slopes are subject to surface runoff and commonly have less water moving through the soil than nearly level soils, which have very little runoff. Soils in the lower landscape positions are commonly less sloping and may receive runoff from the adjacent, higher areas. The runoff water tends to accumulate in nearly level to depressed areas.

The movement of water through the profile is important in soil development because it aids chemical reactions and is necessary for leaching. The amount of water in the soil affects soil temperature and thus influences the plant and animal life in and on the soil and the rate at which chemical reactions occur. It also affects the availability of certain elements needed for chemical reactions.

Time

The length of time that soil material has been exposed to the soil-forming processes accounts for some differences between soils. The formation of a well defined profile, however, also depends on other factors. Less time is required for a profile to develop in coarse textured material than in similar but finer textured material in the

same environment. Less time is required for a profile to develop in a warm, humid area where the plant cover is dense, as in Richmond County, than in a cold, dry area where the plant cover is sparse.

Soils vary considerably in age. The length of time that a soil has been forming is generally reflected in the profile. Old soils generally have better defined horizons than young soils. In Richmond County, the effects of time as a soil-forming factor are more apparent in the older soils, which are those not on the flood plains. In contrast, young soils, such as Chewacla, Riverview, and Johnston soils, formed in recent alluvium on flood plains and have not been in place long enough to develop as completely as the older soils.

Processes of Horizon Differentiation

One or more soil-forming processes are involved in the formation of a succession of layers, or horizons, in a soil. These processes are the accumulation of organic matter; the leaching of carbonates and other soluble material; the chemical weathering, mainly by hydrolysis, of primary minerals into silicate clay minerals; the translocation of silicate clay and some silt-sized particles from one horizon to another; and the reduction and transfer of iron.

These processes have been active in the formation of most of the soils in Richmond County. The interaction of the first four processes is indicated by the strongly expressed horizons in Norfolk and Pacolet soils. All five processes have probably been active in the formation of the moderately well drained Pelion soils.

Some organic matter has accumulated in all of the soils

in the survey area. Most of the soils contain low amounts of organic matter in the surface layer. The content of organic matter ranges to very high in Johnston and Paxville soils.

Most of the soils in the survey area are acid in the upper layers, unless the surface layer has been limed, because of the humid climate and the low base content of most of the parent materials from which most of the soils formed.

The translocation of clay minerals is an important process in the development of many soils in the survey area. As clay minerals are removed from the A horizon, they accumulate as clay films on the faces of peds, in pores, and in root channels in the B horizon.

As silicate clay forms from primary minerals, some iron is commonly released as hydrated oxides. These oxides are generally red. Even if they occur in small amounts, they give the soil material a brownish color. They are largely responsible for the red to brown colors that are dominant in the subsoil of many soils in the survey area.

The reduction and transfer of iron have occurred in all of the soils that are not characterized by good natural drainage. This process, known as gleying, is evidenced by a gray matrix color and by iron or clay depletions. Some of the iron may be reoxidized and segregated and thus form yellow, brown, red, or other brightly colored masses of iron accumulation in an essentially gray matrix in the subsoil. Nodules or concretions of iron or manganese commonly also form as a result of this process. Soil features associated with chemically reduced iron are referred to as redoximorphic features (19).

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Glossary

Access road. A road constructed to facilitate the use and management of the land. Access roads are designed for limited traffic and typically consist of a cut slope, a roadbed, and a fill outslope.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Aquifer. A water-bearing bed or stratum of permeable rock, sand, or gravel capable of fielding considerable quantities of water to wells or springs.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Argillite. A fine grained, slightly metamorphosed rock derived from fine grained sedimentary rocks, such as shale. Planes of cleavage are moderately well developed but not as pronounced as slate.

Aspect. The direction in which a slope faces. Generally, cool aspects are north- to east-facing and warm aspects are south- to west-facing.

Atterberg limits. Atterberg limits are measured for soil materials passing the No. 40 sieve. They include the liquid limit (LL), which is the moisture content at which the soil passes from a plastic to a liquid state, and the plasticity index (PI), which is the water content corresponding to an arbitrary limit between the plastic and semisolid states of consistency of a soil.

Available water capacity (available moisture capacity). The capacity of soils to hold water

available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Borrow area. A small area (commonly less than 3 acres in size) from which soil materials have been removed. These areas support few or no plants without major reclamation.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches

(15 centimeters) along the longest axis. A single piece is called a channer.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clayey. A general textural term that includes sandy clay, silty clay, and clay. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) containing 35 percent or more clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clod. See Aggregate, soil.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse-loamy. According to family level criteria in the soil taxonomic system, soil containing less than 18 percent, by weight, clay and 15 percent or more fine sand or coarser material.

Coarse textured soil. Sand or loamy sand.

Coastal Plain. The physiographic region of eastern North Carolina that consists of ocean-deposited sediments of sand, silt, and clay. These areas of sediments are level to rolling and vary in thickness.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane that typically takes the form of concentric layers

visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Crust. A thin, hard layer of soil material that forms on the surface in cultivated areas as the result of fine soil material settling out of ponding.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Dbh (diameter at breast height). The diameter of a tree at 4.5 feet above the ground level on the uphill side.

Delineation. The process of drawing or plotting features on a map with lines and symbols.

Depression (depressional area). A portion of land surrounded on all sides by higher land. These areas generally do not have outlets for drainage.

Depth class. Refers to the depth to a root-restricting layer. Unless otherwise stated, this layer is understood to be consolidated bedrock. The depth classes in this survey are:

Shallow	10 to 20 inches
Moderately deep	20 to 40 inches
Deep	40 to 60 inches
Very deep	more than 60 inches

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; and shallow, 10 to 20 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diabase. A rock of basaltic composition consisting primarily of labradorite and pyroxene and characterized by ophitic texture.

Dike. A long, narrow, crosscutting mass of igneous rock that extends to or crops out on the land surface.

Dispersion (soils). The breakup of compound particles, such as soil aggregates or saprolite, into single grains, resulting in a highly erosive condition. This phenomenon results from the failure of grains to adhere or bond to one another and generally is associated with a high water content in soil containing high levels of sodium.

Dispersive material. Soil material generally associated with high levels of sodium that causes a breakup of compound particles, such as soil aggregates or saprolite, into single grains and thus results in a highly erosive condition.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to

those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A narrow, gently sloping to very steep, concave colluvial area along an intermittent or perennial stream.

Eroded (soil phase). Because of erosion, these soils have lost an average of 25 to 75 percent of the original A horizon or the uppermost 2 to 6 inches if the original A horizon was less than 8 inches thick.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion classes. Classes based on estimates of past erosion. The classes are as follows:

Class 1.—Soils that have lost some of the original A horizon but on the average less than 25 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most of the area, the thickness of the surface layer is within the normal range of variability of the uneroded soil. Class 1 erosion typically is not designated in the name of the map unit or in the map symbol.

Class 2.—Soils that have lost an average of 25 to 75 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most cultivated areas of class 2 erosion, the surface layer consists of a mixture of the original A horizon and material from below. Some areas may have intricate patterns ranging from uneroded spots to spots where all of the original A horizon has been removed.

Class 3.—Soils that have lost an average of 75 percent or more of the original A horizon or of the uppermost 8 inches (if the original A horizon was less

than 8 inches thick). In most cultivated areas of class 3 erosion, material that was below the original A horizon is exposed. The plow layer consists entirely or largely of this material.

Class 4.—Soils that have lost all of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick) plus some or all of the deeper horizons throughout most of the area. The original soil can be identified only in spots. Some areas may be smooth, but most have an intricate pattern of gullies.

Erosion hazard. Terms describing the potential for future erosion, inherent in the soil itself, in inadequately protected areas. The following definitions are based on estimated annual soil loss in metric tons per hectare (values determined by the Universal Soil Loss Equation assuming bare soil conditions and using rainfall and climate factors for North Carolina):

0 tons per hectare	none
Less than 2.5 tons per hectare	slight
2.5 to 10 tons per hectare	moderate
10 to 25 tons per hectare	severe
More than 25 tons per hectare	very severe

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Evapotranspiration. The combined loss of water from a given area through surface evaporation and through transpiration by plants during a specified period.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fall Line. The boundary between the Coastal Plain and Piedmont physiographic regions. The line is a zone of transition and varies considerably in width. The uplands are commonly Coastal Plain sediments, and the bottom of stream channels is hard Piedmont rock. The prevalence of falls in the rocky channels prompted the term "fall line."

Fast intake (in tables). The rapid movement of water into the soil.

Felsic rock. A general term for light-colored igneous rock and some metamorphic crystalline rock that have an abundance of quartz, feldspars, feldspathoids, and muscovite mica.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field border. A strip of perennial vegetation (trees, shrubs, or herbaceous plants) established on the

edge of a field to control erosion, provide travel lanes for farm machinery, control competition from adjacent woodland, or provide food and cover for wildlife.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine-loamy. According to family level criteria in the soil taxonomic system, soil containing 18 to 35 percent, by weight, clay and 15 percent or more fine sand or coarser material.

Fine textured soil. Sandy clay, silty clay, or clay.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material is 35 to 60 percent flagstones, and extremely flaggy soil material is more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flat. A general term for a level or nearly level surface or small area of land marked by little or no relief.

Flooding. The temporary covering of the soil surface by flowing water from any source, such as overflowing streams, runoff from adjacent or surrounding slopes, and inflow from high tides. The frequency of flooding generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). The duration of flooding is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month).

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological

factors by which it may be differentiated from other stands.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Gabbro. A coarse grained, igneous intrusive rock dominated by dark minerals consisting primarily of calcic plagioclase and clinopyroxene.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Granite. A coarse grained igneous rock dominated by light-colored minerals, consisting of about 50 percent orthoclase and 25 percent quartz with the balance being plagioclase feldspars and ferromagnesian silicates. Granites and granodiorites comprise 95 percent of all intrusive rocks.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot. A small area of soil (commonly less than 1 acre in size) that has a gravelly, very gravelly, or extremely gravelly surface layer and occurs within a delineation of nongravelly soils.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small ravine that has been cut by the downward movement of water. Areas are generally 5 to 20 feet deep and 50 to 300 feet long. These areas are deep enough to interfere with farm machinery and cannot be obliterated by conventional operations.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

High stream terrace. A terrace, commonly 20 feet or higher in elevation than the adjacent flood plain, that is no longer subject to flooding.

High water table (seasonal). The highest level of a saturated zone (the apparent or perched water table) over a continuous period of more than 2 weeks in most years, but not a permanent water table.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during

periods after prolonged wetting when the soil is not frozen. These properties are depth to a high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermediate rock. Igneous or metamorphic crystalline rock that is intermediate in composition between mafic and felsic rock.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation include:

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Landform. The description of a given terrain based on position and configuration. Examples are flood plain, stream terrace, fan, mountain slope, and ridge.

Landform position. A particular place within a landform. Examples are summit of a ridge, shoulder of a ridge, nose slope, side slope, back slope, and foot slope.

Landscape. A collection of related, natural landforms; generally, the land surface that can be seen in a single view.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy. A general textural term that includes coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, and silty clay loam. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of loamy very fine sand or finer textured material that contains less than 35 percent clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Low strength. The soil is not strong enough to support loads.

Mafic rock. A dark rock composed predominantly of magnesium silicates. It contains little quartz, feldspar, or muscovite mica.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide

generally are considered a type of redoximorphic concentration.

Mean annual increment. The average yearly volume of a stand of trees from the year of origin to the age under consideration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Micas. A group of silicate minerals characterized by sheet or scale cleavage. Biotite is the ferromagnesian black mica. Muscovite is the potassic white mica.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Montmorillonite. An aluminosilicate clay mineral with 2:1 layer structure; that is, two silicon tetrahedral sheets enclosing an aluminum octahedral sheet. Considerable expansion may occur when water mixes with the clay.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material.

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and

manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

No-till planting. A method of planting crops in which there is virtually no seedbed preparation. A thin slice of the soil is opened, and the seed is planted at the desired depth.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Overstory. The portion of the trees in a forest stand forming the upper crown cover.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this

rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phyllite. A moderately metamorphosed rock derived from fine grained sedimentary rocks, such as shale. It is intermediate in metamorphism between slate and schist. A mica sheen occurs along cleavage planes.

Piedmont. The physiographic region of central North Carolina characterized by rolling landscapes formed from the weathering of residual rock material.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pits (mine or quarry). A small borrow area or pit (commonly less than 5 acres in size) from which soil, gravel, or stone has been removed.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, generally in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of

the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reforestation. The process in which tree seedlings are planted or become naturally established in an area that was once forested.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Ridge. A long, narrow elevation of the land surface, commonly having a sharp crest and steep sides.

Ridge nose. The downward sloping, convex terminal point of a main ridge or a spur ridge.

Rippable. Rippable bedrock or hardpan can be

excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 drawbar horsepower rating.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. An area of exposed bedrock (commonly less than 2 acres in size) in delineations of nonrocky soils.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Runoff class (surface). Refers to the rate at which water flows away from the soil over the surface without infiltrating. Six classes of rate of runoff are recognized:

Ponded.—Little of the precipitation and water that runs onto the soil escapes as runoff, and free water stands on the surface for significant periods. The amount of water that is removed from ponded areas by movement through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs on level and nearly level soils in depressions. The water depth may fluctuate greatly.

Very slow.—Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. The soils are commonly level or nearly level or are very porous.

Slow.—Surface water flows away so slowly that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils are nearly level or very gently sloping, or they are steeper but absorb precipitation very rapidly.

Medium.—Surface water flows away so rapidly that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils are nearly level or gently sloping and absorb precipitation at a moderate rate, or they are steeper but absorb water rapidly.

Rapid.—Surface water flows away so rapidly that the period of concentration is brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly moderately steep or steep and have moderate or slow rates of absorption.

Very rapid.—Surface water flows away so rapidly that the period of concentration is very brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly steep or very steep and absorb precipitation slowly.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sandy. A general textural term that includes coarse sand, sand, fine sand, very fine sand, loamy coarse sand, loamy sand, loamy fine sand, and loamy very fine sand. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of sand or loamy sand that contains less than 50 percent very fine sand, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Sandy spot. A small area of soil (commonly less than 2 acres in size) that has a sandy or coarse textured subsoil and occurs within a delineation of coarse textured, loamy or clayey soils.

Saprolite. Unconsolidated residual material underlying the genetically developed soil and grading to bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Schist. A metamorphic rock dominated by fibrous or platy minerals. It has schistose cleavage and is a product of regional metamorphism.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are

almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot. A small area of soil (commonly less than 3 acres in size) from which more than 75 percent of the original surface layer has been removed by erosion, occurring in an area of noneroded soils.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Short, steep slope. An area of steep slopes too small to be delineated within a mapped area of much gentler slopes. These areas are generally long, narrow bands (less than 3 to 5 acres in size) that are 50 to 100 feet in width and 100 or more feet in length.

Shoulder. The landscape position, parallel to the summit, that is directly below the ridgetop and directly above the side slope.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. The landscape position that is directly below the shoulder and directly above the toe slope, occupying most of the mountainside or hillside.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Silty. A general textural term that includes silt, silt loam, and silty clay loam.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Skidding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most systems involve pulling the trees with wire cables attached to a bulldozer or rubber-tired tractor. Generally, felled trees are skidded or pulled with one end lifted to reduce friction and soil disturbance.

Skid trails. The paths left from skidding logs and the bulldozer or tractor used to pull them.

Slate. A fine grained metamorphic rock with well developed planes of cleavage that was derived from fine grained sedimentary rocks, such as shale.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slippage. Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 3 percent
Gently sloping	1 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 55 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil compaction. An alteration of soil structure that ultimately can affect the biological and chemical properties of the soil. Compaction decreases the extent of voids and increases bulk density.

Soil map unit. A kind of soil or miscellaneous area or a combination of two or more soils or one or more soils and one or more miscellaneous areas that can be shown at the scale of mapping for the defined purposes and objectives of the soil survey. Soil map units are generally designed to reflect significant differences in use and management among the soils of a survey area.

Soil sample site (map symbol). The location of the typifying pedon site for the survey area.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of

separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Soil strength. Load-supporting capacity of a soil at specific moisture and density conditions.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stand density. The degree to which an area is covered with living trees. It is usually expressed in units of basal areas per acre, number of trees per acre, or the percentage of ground covered by the tree canopy as viewed from above.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony or very stony spot. A small area (commonly less than 2 acres in size) of stony or very stony soil that occurs within a delineation of nonstony soils.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to soil blowing and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Suitability ratings. Ratings for the degree of suitability of soils for pasture, crops, woodland, and engineering uses. The ratings and the general criteria used for their selection are as follows:

Well suited.—The intended use may be initiated and maintained by using only the standard materials and methods typically required for that use. Good results can be expected.

Moderately suited.—The limitations affecting the intended use make special planning, design, or maintenance necessary.

Poorly suited.—The intended use is difficult or costly to initiate and maintain because of certain soil properties, such as steep slopes, a severe hazard of erosion, a high water table, low fertility, and a hazard of flooding. Major soil reclamation, special design, or intensive management practices are needed.

Unsuited.—The intended use is very difficult or costly to initiate and maintain, and thus it generally should not be undertaken.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural

classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine." The textural classes are defined as follows:

Sands (coarse sand, sand, fine sand, and very fine sand).—Soil material in which the content of sand is 85 percent or more and the percentage of silt plus $1\frac{1}{2}$ times the percentage of clay does not exceed 15.

Loamy sands (loamy coarse sand, loamy sand, loamy fine sand, and loamy very fine sand).—Soil material in which, at the upper limit, the content of sand is 85 to 90 percent and the percentage of silt plus $1\frac{1}{2}$ times the percentage of clay is not less than 15; at the lower limit, the content of sand is 70 to 85 percent and the percentage of silt plus twice the percentage of clay does not exceed 30.

Sandy loams (coarse sandy loam, sandy loam, fine sandy loam, and very fine sandy loam).—Soil material in which the content of clay is 20 percent or less, the percentage of silt plus twice the percentage of clay exceeds 30, and the content of sand is 52 percent or more or soil material in which the content of clay is less than 7 percent, the content of silt is less than 50 percent, and the content of sand is 43 to 52 percent.

Loam.—Soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

Silt loam.—Soil material that contains 50 percent or more silt and 12 to 27 percent clay or 50 to 80 percent silt and less than 12 percent clay.

Silt.—Soil material that contains 80 percent or more silt and less than 12 percent clay.

Sandy clay loam.—Soil material that contains 20 to 35 percent clay, less than 28 percent silt, and 45 percent or more sand.

Clay loam.—Soil material that contains 27 to 40 percent clay and 20 to 45 percent sand.

Silty clay loam.—Soil material that contains 27 to 40 percent clay and less than 20 percent sand.

Sandy clay.—Soil material that contains 35 percent or more clay and 45 percent or more sand.

Silty clay.—Soil material that contains 40 percent or more clay and 40 percent or more silt.

Clay.—Soil material that contains 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to

tillage, seedbed preparation, seedling emergence, and root penetration.

Topography. The relative positions and elevations of the natural or manmade features of an area that describe the configuration of its surface.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Triassic. The earliest of the three geologic periods comprising the Mesozoic era; approximately 225 million years ago to 180 million years ago.

Underlying material. Technically the C horizon; the part of the soil below the biologically altered A and B horizons.

Understory. The trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portions of adjacent trees and other woody growth.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Water table (apparent). A thick zone of free water in the soil. The apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table (perched). A saturated zone of water in the soil standing above an unsaturated zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wetness. A general term applied to soils that hold water at or near the surface long enough to be a common management problem.

Wet spot. A small area (commonly less than 3 acres in size) of soil that is at least two drainage classes wetter than the delineated soils. Symbols for wet spots are not placed within areas mapped as poorly drained or very drained soils.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much

that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Yield (forest land). The volume of wood fiber from trees harvested in a certain unit of area. Yield is usually measured in board feet or cubic feet per acre.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION
(Recorded in the period 1950-93 at Hamlet, North Carolina)

Month	Temperature						Precipitation			
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have--		Average number of growing degree days*	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--	
	° F	° F	° F	° F	° F	Units	In	In	In	
January-----	53.3	29.2	41.2	76	7	141	3.67	2.19	5.00	6
February-----	57.5	31.5	44.5	79	10	184	3.82	2.29	5.18	7
March-----	65.5	38.2	51.8	86	18	380	4.38	2.68	5.91	7
April-----	75.4	47.0	61.2	92	26	621	3.07	1.54	4.40	5
May-----	82.4	55.9	69.2	96	36	887	3.83	2.52	5.03	7
June-----	88.4	63.4	75.9	101	46	1,061	4.46	2.47	6.21	6
July-----	91.1	67.5	79.3	102	56	1,189	6.01	3.21	8.47	8
August-----	89.6	66.7	78.2	100	54	1,147	4.83	2.53	6.84	7
September---	84.5	60.5	72.5	96	41	973	3.49	1.64	5.24	5
October-----	74.9	48.1	61.5	91	26	636	3.56	1.11	5.70	4
November-----	65.3	38.0	51.6	83	17	359	2.96	1.28	4.39	5
December-----	55.7	31.1	43.4	77	10	180	3.31	1.77	4.67	6
Yearly:										
Average---	73.6	48.1	60.9	---	---	---	---	---	---	---
Extreme---	107	-6	---	103	5	---	---	---	---	---
Total-----	---	---	---	---	---	7,758	47.38	39.89	53.57	73

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL
(Recorded in the period 1950-93 at Hamlet, North Carolina)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 1	Apr. 14	Apr. 29
2 years in 10 later than--	Mar. 25	Apr. 8	Apr. 23
5 years in 10 later than--	Mar. 10	Mar. 27	Apr. 11
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 3	Oct. 22	Oct. 13
2 years in 10 earlier than--	Nov. 9	Oct. 27	Oct. 16
5 years in 10 earlier than--	Nov. 19	Nov. 5	Oct. 24

TABLE 3.--GROWING SEASON
(Recorded in the period 1950-93 at Hamlet, North
Carolina)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	<u>Days</u>	<u>Days</u>	<u>Days</u>
9 years in 10	218	196	172
8 years in 10	226	204	180
5 years in 10	242	219	194
2 years in 10	258	233	209
1 year in 10	266	241	216

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AaB	Ailey sand, moderately wet, 0 to 6 percent slopes-----	110	*
AcB	Ailey loamy sand, 0 to 8 percent slopes-----	27,360	8.9
AcC	Ailey loamy sand, 8 to 15 percent slopes-----	46,377	15.1
AgC	Ailey gravelly loamy sand, 8 to 15 percent slopes-----	1,072	0.4
AgD	Ailey gravelly loamy sand, 15 to 25 percent slopes-----	1,934	0.6
AuB	Ailey-Urban land complex, 0 to 8 percent slopes-----	2,136	0.7
AuC	Ailey-Urban land complex, 8 to 15 percent slopes-----	549	0.2
BcB	Badin channery silt loam, 2 to 8 percent slopes-----	573	0.2
BgC	Badin-Goldston complex, 8 to 15 percent slopes-----	1,920	0.6
CaC	Candor and Wakulla soils, 8 to 15 percent slopes-----	22,461	7.3
ChA	Chewacla loam, 0 to 2 percent slopes, frequently flooded-----	11,359	3.7
CrB	Creedmoor fine sandy loam, 2 to 8 percent slopes-----	3,139	1.0
CzD	Cullen-Wynott complex, 15 to 35 percent slopes-----	2,416	0.8
DaB2	Davidson clay loam, 2 to 8 percent slopes, eroded-----	402	0.1
DaC2	Davidson clay loam, 8 to 15 percent slopes, eroded-----	486	0.2
EmD	Enon-Mayodan complex, 15 to 35 percent slopes, very stony-----	149	*
EzB	Enon-Wynott complex, 2 to 8 percent slopes-----	284	0.1
EzC	Enon-Wynott complex, 4 to 15 percent slopes, very bouldery-----	179	0.1
FaB2	Faceville sandy clay loam, 2 to 6 percent slopes, eroded-----	46	*
GdD	Goldston-Badin complex, 15 to 55 percent slopes-----	7,610	2.5
HsA	Hornsboro silt loam, 0 to 2 percent slopes-----	1,927	0.6
JmA	Johnston mucky loam, 0 to 2 percent slopes, frequently flooded-----	11,898	3.9
MaC	Masada sandy loam, 8 to 15 percent slopes-----	5,273	1.7
MaD	Masada sandy loam, 15 to 25 percent slopes-----	2,248	0.7
MbB2	Mayodan sandy clay loam, 2 to 8 percent slopes, eroded-----	1,209	0.4
MbC2	Mayodan sandy clay loam, 8 to 15 percent slopes, eroded-----	3,142	1.0
MbD	Mayodan sandy loam, 15 to 25 percent slopes-----	2,152	0.7
MdD	Mayodan sandy loam, 15 to 25 percent slopes, stony-----	303	0.1
MeB2	Mayodan-Exway complex, 2 to 8 percent slopes, eroded-----	923	0.3
MeC2	Mayodan-Exway complex, 8 to 15 percent slopes, eroded-----	590	0.2
MnB	McQueen loam, 1 to 6 percent slopes-----	1,354	0.4
NoA	Norfolk loamy sand, 0 to 2 percent slopes-----	662	0.2
NoB	Norfolk loamy sand, 2 to 6 percent slopes-----	1,781	0.6
OrA	Orangeburg loamy sand, 0 to 2 percent slopes-----	430	0.1
OrB	Orangeburg loamy sand, 2 to 6 percent slopes-----	1,023	0.3
PaC	Pacolet gravelly sandy loam, 8 to 15 percent slopes-----	938	0.3
PaD	Pacolet gravelly sandy loam, 15 to 35 percent slopes-----	3,821	1.2
PcA	Paxville fine sandy loam, 0 to 2 percent slopes-----	1,217	0.4
PeA	Peawick fine sandy loam, 0 to 2 percent slopes-----	2,370	0.8
PeB	Peawick fine sandy loam, 2 to 6 percent slopes-----	6,448	2.1
PfA	Peawick silt loam, 0 to 3 percent slopes, rarely flooded-----	359	0.1
PoA	Pelion loamy sand, 0 to 2 percent slopes-----	2,688	0.9
PoB	Pelion loamy sand, 2 to 8 percent slopes-----	6,891	2.2
PoC	Pelion loamy sand, 8 to 15 percent slopes-----	1,912	0.6
PrB	Pelion-Urban land complex, 0 to 8 percent slopes-----	265	0.1
PrC	Pelion-Urban land complex, 8 to 15 percent slopes-----	281	0.1
PsC	Pinkston fine sandy loam, 4 to 15 percent slopes, very stony-----	204	0.1
Pt	Pits, quarry-----	263	0.1
RvA	Riverview loam, 0 to 2 percent slopes, occasionally flooded-----	2,038	0.7
TbA	Turbeville sandy loam, 0 to 2 percent slopes-----	788	0.3
TbB	Turbeville sandy loam, 2 to 8 percent slopes-----	5,050	1.6
Ud	Udorthents, loamy-----	983	0.3
Ur	Urban land-----	428	0.1
UwB2	Uwharrie clay loam, 2 to 8 percent slopes, eroded-----	2,502	0.8
UwC2	Uwharrie clay loam, 8 to 15 percent slopes, eroded-----	1,801	0.6
UwD	Uwharrie loam, 15 to 25 percent slopes-----	3,022	1.0
UxB2	Uwharrie-Badin complex, 2 to 8 percent slopes, eroded-----	2,674	0.9
UxC2	Uwharrie-Badin complex, 8 to 15 percent slopes, eroded-----	9,317	3.0
UxD	Uwharrie-Badin complex, 15 to 25 percent slopes-----	4,932	1.6

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
WcB	Wakulla and Candor soils, 0 to 8 percent slopes-----	72,939	23.8
WuB	Wakulla-Candor-Urban land complex, 0 to 10 percent slopes-----	2,491	0.8
	Water-----	4,836	1.6
	Dam-----	3	*
	Total-----	306,938	100.0

* Less than 0.1 percent.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Soybeans	Sweet potatoes	Tobacco	Wheat	Improved bermudagrass	Improved bermudagrass hay
		Bu	Bu	Bu	Lbs	Bu	¹ AUM	Tons
AaB, AcB----- Ailey	IIIs	55	25	155	3,000 ²	30	6.5	3.9
AcC----- Ailey	VIIs	50	20	150	3,000 ²	25	6.0	3.6
AgC----- Ailey	VIIs	---	---	---	---	---	5.0	3.0
AgD----- Ailey	VIIe	---	---	---	---	---	---	---
AuB ³ : Ailey-----	IIIs	---	---	---	---	---	---	---
Urban land-----	VIIIs	---	---	---	---	---	---	---
AuC ³ : Ailey-----	VIIs	---	---	---	---	---	---	---
Urban land-----	VIIIs	---	---	---	---	---	---	---
BcB----- Badin	IIIe	75	25	---	---	35	6.5 ⁴	3.9 ⁴
BgC: Badin-----	IVe	75	20	---	---	35	6.0 ⁴	3.6 ⁴
Goldston-----	IVs	65	20	---	---	30	4.5 ⁴	2.7 ⁴
CaC----- Candor-Wakulla	IVs	40	15	140	3,000 ²	25	6.0	3.6
ChA----- Chewacla	IVw	100	30	---	---	40	9.0 ⁴	5.4 ⁴
CrB----- Creedmoor	IIe	85	35	---	2,200	40	6.0 ⁴	3.6
CzD: Cullen-----	VIe	---	---	---	---	---	8.0 ⁴	4.8 ⁴
Wynott-----	VIIe	---	---	---	---	---	6.5 ⁴	3.9 ⁴
DaB2----- Davidson	IIIe	110	40	---	---	40	9.7	5.8
DaC2----- Davidson	IVe	90	30	---	---	---	8.3	5.0
EmD----- Enon-Mayodan	VIIIs	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Sweet potatoes	Tobacco	Wheat	Improved bermudagrass	Improved bermudagrass hay
		Bu	Bu	Bu	Lbs	Bu	¹ AUM	Tons
EzB:								
Enon-----	IIIe	80	25	---	1,800	35	8.5 ⁴	5.1 ⁴
Wynott-----	IIIe	80	25	---	1,650	30	7.5 ⁴	4.5 ⁴
EzC:								
Enon-----	VIIs	---	---	---	---	---	5.5 ⁴	---
Wynott-----	VIIs	---	---	---	---	---	4.5 ⁴	---
FaB2-----	IIIe	90	35	---	2,000	45	8.0	4.8
Faceville								
GdD:								
Goldston-----	VIIIIs	---	---	---	---	---	---	---
Badin-----	VIIe	---	---	---	---	---	---	---
HsA-----	IVw	80	25	---	---	35	9.0 ⁴	5.4 ⁴
Hornsboro								
JmA-----	VIIw	---	---	---	---	---	---	---
Johnston								
MaC-----	IIIe	80	25	---	---	35	9.3 ⁴	5.6 ⁴
Masada								
MaD-----	IVe	---	---	---	---	---	7.3 ⁴	4.4 ⁴
Masada								
MbB2-----	IIIe	90	30	---	2,000	40	7.5 ⁴	4.5 ⁴
Mayodan								
MbC2-----	IVe	80	25	---	1,800	35	6.0 ⁴	3.6 ⁴
Mayodan								
MbD-----	VIe	---	---	---	---	---	6.0 ⁴	3.6 ⁴
Mayodan								
MdD-----	VIIs	---	---	---	---	---	5.5 ⁴	---
Mayodan								
MeB2:								
Mayodan-----	IIIe	90	30	---	2,000	40	7.5 ⁴	4.5 ⁴
Exway-----	IIIe	75	25	---	1,700	35	7.0 ⁴	4.2 ⁴
MeC2:								
Mayodan-----	IVe	80	25	---	1,800	35	6.0 ⁴	3.6 ⁴
Exway-----	IVe	65	20	---	1,500	30	5.5 ⁴	3.3 ⁴
MnB-----	IIe	110	40	---	---	40	9.5 ⁴	5.7 ⁴
McQueen								
NoA-----	I	110	40	170	3,000	60	10.5	6.3
Norfolk								

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Sweet potatoes	Tobacco	Wheat	Improved bermudagrass	Improved bermudagrass hay
		Bu	Bu	Bu	Lbs	Bu	¹ AUM	Tons
NoB----- Norfolk	IIe	100	35	170	2,900	55	10.5	6.3
OrA----- Orangeburg	I	120	45	160	2,400	60	10.5	6.3
OrB----- Orangeburg	IIe	120	45	160	2,400	55	10.5	6.3
PaC----- Pacolet	IVe	65	25	---	1,400	30	5.5 ⁴	3.3 ⁴
PaD----- Pacolet	VIIe	---	---	---	---	---	4.5 ⁴	2.7 ⁴
PcA----- Paxville	VIw	110 ⁵	40 ⁵	---	---	40 ⁵	10.0 ⁵	6.0 ⁵
PeA----- Peawick	IIw	90	30	---	2,200	40	8.5 ⁴	5.1 ⁴
PeB----- Peawick	IIe	85	30	---	2,100	40	8.0 ⁴	4.8 ⁴
PfA----- Peawick	IIw	90	30	---	2,200	40	8.5 ⁴	5.1 ⁴
PoA----- Pelion	IIw	90	30	---	2,000	40	8.0	4.8
PoB----- Pelion	IIe	85	30	---	1,900	40	8.0	4.8
PoC----- Pelion	IVe	75	25	---	1,700	35	6.0	3.6
PrB ³ : Pelion-----	IIe	---	---	---	---	---	---	---
Urban land-----	VIIIIs	---	---	---	---	---	---	---
PrC ³ : Pelion-----	VIe	---	---	---	---	---	---	---
Urban land-----	VIIIIs	---	---	---	---	---	---	---
PsC----- Pinkston	VIIs	---	---	---	---	---	3.0 ⁴	---
Pt ³ ----- Pits	VIIIIs	---	---	---	---	---	---	---
RvA----- Riverview	IIw	130	40	---	2,600	55	10.0 ⁴	6.0 ⁴
TbA----- Turbeville	I	110	40	---	2,100	50	8.5 ⁴	5.1 ⁴

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Sweet potatoes	Tobacco	Wheat	Improved bermudagrass	Improved bermudagrass hay
		Bu	Bu	Bu	Lbs	Bu	¹ AUM	Tons
TbB----- Turbeville	IIE	100	35	---	2,100	50	8.5 ⁴	5.1 ⁴
Ud----- Udorthents	VIIIIs	---	---	---	---	---	---	---
Ur ³ ----- Urban land	VIIIIs	---	---	---	---	---	---	---
UwB2----- Uwharrie	IIIe	85	30	---	2,000	40	7.5 ⁴	4.5 ⁴
UwC2----- Uwharrie	IVe	80	25	---	1,800	35	6.0 ⁴	3.6 ⁴
UwD----- Uwharrie	VIe	---	---	---	---	---	5.5 ⁴	3.3 ⁴
UxB2: Uwharrie-----	IIIe	85	30	---	2,000	40	7.5 ⁴	4.5 ⁴
Badin-----	IVe	70	20	---	1,700	30	5.5 ⁴	3.3 ⁴
UxC2: Uwharrie-----	IVe	80	25	---	---	35	6.0 ⁴	3.6 ⁴
Badin-----	IVe	55	15	---	---	20	5.0 ⁴	3.0 ⁴
UxD: Uwharrie-----	VIe	---	---	---	---	---	5.5 ⁴	3.3 ⁴
Badin-----	VIe	---	---	---	---	---	5.0 ⁴	3.0 ⁴
WcB: Wakulla-----	IIIs	45	20	150	3,000 ²	30	6.0	3.6
Candor-----	IVs	40	15	150	3,000 ²	30	6.0	3.6
WuB ³ : Wakulla-----	IIIs	---	---	---	---	---	---	---
Candor-----	IVs	---	---	---	---	---	---	---
Urban land----	VIIIIs	---	---	---	---	---	---	---

¹ Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

² Yields are attainable only if crop is irrigated.

³ See description of the map unit for composition and behavior characteristics of the map unit.

⁴ Yields are for tall fescue.

⁵ Yields are attainable only if an artificial drainage system is provided.

TABLE 6.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
ChA	Chewacla loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
CrB	Creedmoor fine sandy loam, 2 to 8 percent slopes
DaB2	Davidson clay loam, 2 to 8 percent slopes, eroded
FaB2	Faceville sandy clay loam, 2 to 6 percent slopes, eroded
MbB2	Mayodan sandy clay loam, 2 to 8 percent slopes, eroded
MnB	McQueen loam, 1 to 6 percent slopes
NoA	Norfolk loamy sand, 0 to 2 percent slopes
NoB	Norfolk loamy sand, 2 to 6 percent slopes
OrA	Orangeburg loamy sand, 0 to 2 percent slopes
OrB	Orangeburg loamy sand, 2 to 6 percent slopes
PcA	Paxville fine sandy loam, 0 to 2 percent slopes (where drained)
PeA	Peawick fine sandy loam, 0 to 2 percent slopes
PeB	Peawick fine sandy loam, 2 to 6 percent slopes
PfA	Peawick silt loam, 0 to 3 percent slopes, rarely flooded
PoA	Pelion loamy sand, 0 to 2 percent slopes
PoB	Pelion loamy sand, 2 to 8 percent slopes
RvA	Riverview loam, 0 to 2 percent slopes, occasionally flooded
TbA	Turbeville sandy loam, 0 to 2 percent slopes
TbB	Turbeville sandy loam, 2 to 8 percent slopes
UwB2	Uwharrie clay loam, 2 to 8 percent slopes, eroded

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol ¹	Management concerns				Potential productivity			Trees to plant ³
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume ²	
AaB, AcB, AcC--- Ailey	4S	Slight	Moderate	Moderate	Moderate	Longleaf pine----- Loblolly pine ⁴ -----	60 80	56 110	Longleaf pine, loblolly pine.
AgC----- Ailey	4S	Slight	Moderate	Moderate	Moderate	Longleaf pine----- Loblolly pine ⁴ -----	58 80	52 110	Longleaf pine, loblolly pine.
AgD----- Ailey	4S	Moderate	Moderate	Moderate	Moderate	Longleaf pine----- Loblolly pine ⁴ -----	58 80	52 110	Longleaf pine, loblolly pine.
BcB----- Badin	8D	Slight	Slight	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Virginia pine ⁴ ----- Yellow-poplar----- White oak----- Scarlet oak----- Chestnut oak-----	80 68 72 --- 66 65 66	110 106 112 --- 48 47 48	Loblolly pine, shortleaf pine.
BgC ⁵ : Badin-----	8D	Slight	Slight	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Virginia pine ⁴ ----- Yellow-poplar----- White oak----- Scarlet oak----- Chestnut oak-----	80 68 72 --- 66 65 66	110 106 112 --- 48 47 48	Loblolly pine, shortleaf pine.
Goldston-----	7D	Slight	Slight	Moderate	Severe	Loblolly pine----- Shortleaf pine----- Southern red oak----- White oak----- Post oak----- Hickory----- Virginia pine ⁴ ----- Red maple-----	76 57 60 63 --- --- 65 ---	103 82 43 46 --- --- 100 ---	Loblolly pine, shortleaf pine.
CaC ⁵ : Candor-----	4S	Slight	Moderate	Moderate	Slight	Longleaf pine----- Loblolly pine----- Turkey oak----- Blackjack oak----- Post oak-----	58 --- --- --- ---	52 --- --- --- ---	Longleaf pine, loblolly pine.
Wakulla-----	5S	Slight	Moderate	Moderate	Slight	Longleaf pine----- Loblolly pine----- Shortleaf pine----- Blackjack oak----- Post oak-----	66 73 69 --- ---	70 98 108 --- ---	Loblolly pine, longleaf pine.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordi- nation symbol ¹	Management concerns				Potential productivity			Trees to plant ³
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Common trees	Site index	Volume ²	
ChA----- Chewacla	7W	Slight	Moderate	Slight	Moderate	Yellow-poplar----- Loblolly pine----- Sweetgum----- Water oak----- Eastern cottonwood-- Green ash ⁴ ----- Southern red oak---- Blackgum----- Red maple----- Willow oak ⁴ ----- American beech----- American sycamore ⁴ --	96 95 100 90 --- 78 --- --- --- 90 --- 97	100 142 138 86 --- 46 --- --- --- 86 --- 116	Yellow-poplar, loblolly pine, sweetgum, American sycamore.
CrB----- Creedmoor	9A	Slight	Slight	Slight	Slight	Loblolly pine----- Yellow-poplar----- Virginia pine----- Shortleaf pine----- Sweetgum----- Water oak----- Red maple-----	87 97 --- --- --- --- ---	125 102 --- --- --- --- ---	Loblolly pine.
CzD ⁵ : Cullen-----	8C	Moderate	Moderate	Slight	Slight	Loblolly pine----- Shortleaf pine----- Yellow-poplar----- Southern red oak----	80 70 80 ---	110 110 71 ---	Loblolly pine, shortleaf pine, yellow- poplar.
Wynott-----	7R	Moderate	Moderate	Slight	Moderate	Loblolly pine----- Sweetgum----- Southern red oak---- White oak----- Willow oak----- Hickory----- Yellow-poplar-----	75 --- --- --- --- --- ---	101 --- --- --- --- --- ---	Loblolly pine.
DaB2, DaC2----- Davidson	9C	Slight	Moderate	Moderate	Slight	Loblolly pine----- Shortleaf pine----- Southern red oak---- Sweetgum----- White oak----- Yellow-poplar-----	86 68 72 80 71 80	123 106 54 79 53 71	Loblolly pine, yellow-poplar.
EmD ⁵ : Enon-----	7R	Moderate	Moderate	Moderate	Slight	Loblolly pine----- Shortleaf pine----- Virginia pine----- Southern red oak---- Sweetgum----- White oak----- Yellow-poplar----- Hickory-----	73 63 --- --- 87 --- 88 ---	98 95 --- --- 98 --- 86 ---	Loblolly pine.
Mayodan-----	9R	Moderate	Moderate	Moderate	Slight	Loblolly pine----- Virginia pine----- Yellow-poplar----- Southern red oak----	88 --- --- ---	127 --- --- ---	Loblolly pine.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol ¹	Management concerns				Potential productivity			Trees to plant ³
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume ²	
EzB ⁵ : Enon-----	7A	Slight	Moderate	Slight	Slight	Loblolly pine----- Shortleaf pine----- Virginia pine----- Southern red oak----- Sweetgum----- White oak----- Yellow-poplar----- Hickory-----	73 63 --- --- 87 --- 88 ---	98 95 --- --- 98 --- 86 ---	Loblolly pine.
Wynott-----	7D	Slight	Moderate	Slight	Moderate	Loblolly pine----- Sweetgum----- Southern red oak----- White oak----- Willow oak----- Hickory----- Yellow-poplar-----	75 --- --- --- --- --- ---	101 --- --- --- --- --- ---	Loblolly pine.
EzC ⁵ : Enon-----	7X	Slight	Moderate	Moderate	Slight	Loblolly pine----- Shortleaf pine----- Virginia pine----- Southern red oak----- Sweetgum----- White oak----- Yellow-poplar----- Hickory-----	73 63 --- --- 87 --- 88 ---	98 95 --- --- 98 --- 86 ---	Loblolly pine.
Wynott-----	7X	Slight	Moderate	Moderate	Moderate	Loblolly pine----- Sweetgum----- Southern red oak----- White oak----- Willow oak----- Hickory----- Yellow-poplar-----	75 --- --- --- --- --- ---	101 --- --- --- --- --- ---	Loblolly pine.
FaB2----- Faceville	8A	Slight	Slight	Slight	Slight	Loblolly pine----- Longleaf pine-----	82 65	114 67	Loblolly pine.
GdD ⁵ : Goldston-----	7D	Moderate	Moderate	Moderate	Severe	Loblolly pine----- Shortleaf pine----- Southern red oak----- White oak----- Post oak----- Hickory----- Virginia pine ⁴ ----- Red maple-----	76 60 60 63 --- --- 65 ---	103 88 43 46 --- --- 100 ---	Loblolly pine.
Badin-----	8R	Severe	Severe	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Virginia pine ⁴ ----- Yellow-poplar----- White oak----- Scarlet oak----- Chestnut oak-----	80 68 72 --- 66 65 66	110 106 112 --- 48 47 48	Loblolly pine, shortleaf pine.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol ¹	Management concerns				Potential productivity			Trees to plant ³
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume ²	
HsA----- Hornsboro	9W	Slight	Moderate	Moderate	Moderate	Loblolly pine----- Sweetgum----- Blackgum----- Water oak----- Swamp chestnut oak-- Willow oak----- Southern red oak---- White oak----- Yellow-poplar----- Red maple-----	90 --- --- --- --- --- --- --- --- ---	131 --- --- --- --- --- --- --- --- ---	Loblolly pine.
JmA----- Johnston	7W	Slight	Severe	Severe	Severe	Yellow-poplar----- Sweetgum----- Water oak----- Water tupelo----- Swamp tupelo----- Green ash ⁴ -----	120 112 109 --- --- 93	139 180 109 --- --- 70	Green ash, sweetgum.
MaC----- Masada	8A	Slight	Slight	Slight	Slight	Loblolly pine----- Southern red oak---- Virginia pine----- Shortleaf pine----- Yellow-poplar-----	80 70 70 85 80	110 52 109 140 71	Loblolly pine, yellow-poplar.
MaD----- Masada	8R	Moderate	Moderate	Slight	Slight	Loblolly pine----- Southern red oak---- Virginia pine----- Shortleaf pine----- Yellow-poplar-----	80 70 70 85 80	110 52 109 140 71	Loblolly pine, yellow-poplar.
MbB2, MbC2----- Mayodan	8C	Slight	Moderate	Moderate	Slight	Loblolly pine----- Shortleaf pine----- Yellow-poplar----- Sweetgum----- Southern red oak---- Virginia pine ⁴ -----	78 --- --- --- --- 58	107 --- --- --- --- 86	Loblolly pine, Virginia pine.
MbD----- Mayodan	9R	Moderate	Moderate	Slight	Slight	Loblolly pine----- Shortleaf pine----- Virginia pine----- White oak----- Yellow-poplar----- Sweetgum----- Southern red oak---- Black oak----- Hickory-----	88 63 74 71 --- --- --- --- ---	127 95 114 53 --- --- --- --- ---	Loblolly pine.
MdD----- Mayodan	9R	Moderate	Moderate	Moderate	Slight	Loblolly pine----- Virginia pine----- Yellow-poplar----- Southern red oak---- White oak----- Shortleaf pine-----	88 74 --- --- 71 63	127 114 --- --- 53 95	Loblolly pine.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol ¹	Management concerns				Potential productivity			Trees to plant ³
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume ²	
MeB2 ⁵ , MeC2 ⁵ : Mayodan-----	8C	Slight	Moderate	Moderate	Slight	Loblolly pine----- Shortleaf pine----- Yellow-poplar----- Sweetgum----- Southern red oak----- Virginia pine ⁴ -----	78 --- --- --- --- 58	107 --- --- --- --- 86	Loblolly pine, Virginia pine.
Exway-----	7D	Slight	Moderate	Moderate	Moderate	Loblolly pine----- Shortleaf pine----- Yellow-poplar----- Virginia pine ⁴ ----- White oak----- Hickory----- Southern red oak-----	74 54 --- 61 --- --- ---	100 76 --- 93 --- --- ---	Loblolly pine, Virginia pine.
MnB----- McQueen	8A	Slight	Slight	Slight	Slight	Loblolly pine----- Yellow-poplar----- Shortleaf pine----- Sweetgum-----	80 90 70 80	110 90 110 79	Loblolly pine, yellow-poplar.
NoA, NoB----- Norfolk	8A	Slight	Slight	Slight	Slight	Loblolly pine----- Longleaf pine----- Southern red oak----- White oak----- Yellow-poplar----- Blackgum----- Hickory-----	81 77 --- --- --- --- ---	112 94 --- --- --- --- ---	Loblolly pine.
OrA, OrB----- Orangeburg	8A	Slight	Slight	Slight	Slight	Loblolly pine----- Longleaf pine-----	80 77	110 94	Loblolly pine.
PaC----- Pacolet	8A	Slight	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- Yellow-poplar----- Virginia pine----- Southern red oak----- Hickory----- White oak-----	78 68 90 --- --- --- ---	107 106 90 --- --- --- ---	Loblolly pine, shortleaf pine, yellow- poplar.
PaD----- Pacolet	8R	Moderate	Moderate	Slight	Slight	Loblolly pine----- Shortleaf pine----- Yellow-poplar----- Virginia pine----- Southern red oak----- Hickory----- White oak-----	78 68 90 --- --- --- ---	107 106 90 --- --- --- ---	Loblolly pine, shortleaf pine, yellow- poplar.
PcA----- Paxville	7W	Slight	Severe	Severe	Severe	Sweetgum----- Water oak----- Water tupelo----- Loblolly pine----- Pond pine----- Yellow-poplar-----	90 --- --- --- --- ---	106 --- --- --- --- ---	Sweetgum.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol ¹	Management concerns				Potential productivity			Trees to plant ³
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume ²	
PeA, PeB, PfA--- Peawick	8W	Slight	Moderate	Slight	Slight	Loblolly pine----- Sweetgum----- Yellow-poplar----- Water oak----- White oak-----	85 --- --- --- ---	120 --- --- --- ---	Loblolly pine.
PoA, PoB, PoC--- Pelion	8W	Slight	Moderate	Slight	Moderate	Loblolly pine-----	80	110	Loblolly pine.
PsC----- Pinkston	7X	Slight	Moderate	Moderate	Severe	Loblolly pine----- Southern red oak---- Virginia pine-----	76 60 60	103 43 91	Loblolly pine, Virginia pine.
RvA----- Riverview	11A	Slight	Slight	Slight	Slight	Loblolly pine----- Yellow-poplar----- Sweetgum----- Eastern cottonwood ⁴ -- American sycamore ⁴ --	100 115 105 112 108	154 132 156 162 150	Loblolly pine, yellow-poplar, sweetgum, eastern cottonwood, American sycamore.
TbA, TbB----- Turbeville	8A	Slight	Slight	Slight	Slight	Loblolly pine----- Yellow-poplar----- Virginia pine----- Shortleaf pine----- Southern red oak----	80 84 70 70 70	110 79 109 110 52	Loblolly pine, yellow-poplar.
UwB2, UwC2----- Uwharrie	7C	Slight	Slight	Moderate	Slight	Loblolly pine----- Shortleaf pine-----	77 57	105 82	Loblolly pine, shortleaf pine.
UwD----- Uwharrie	8R	Moderate	Moderate	Slight	Slight	Loblolly pine----- Shortleaf pine----- White oak----- Southern red oak---- Chestnut oak----- Virginia pine----- Black oak----- Yellow-poplar----- Hickory-----	83 63 --- --- --- --- --- 96 ---	116 95 --- --- --- --- --- 100 ---	Loblolly pine.
UxB2 ⁵ , UxC2 ⁵ : Uwharrie-----	7C	Slight	Slight	Moderate	Slight	Loblolly pine----- Shortleaf pine-----	77 57	105 82	Loblolly pine, shortleaf pine.
Badin-----	6D	Moderate	Moderate	Moderate	Moderate	Loblolly pine----- Shortleaf pine----- White oak----- Scarlet oak----- Chestnut oak----- Virginia pine-----	70 60 60 60 60 ---	93 88 43 43 43 ---	Loblolly pine, shortleaf pine.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol ¹	Management concerns				Potential productivity			Trees to plant ³
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume ²	
UxD ⁵ : Uwharrie-----	8R	Moderate	Moderate	Slight	Slight	Loblolly pine----- Shortleaf pine----- White oak----- Southern red oak----- Chestnut oak----- Virginia pine----- Black oak----- Yellow-poplar----- Hickory-----	83 63 --- --- --- --- --- 96 ---	116 95 --- --- --- --- --- 100 ---	Loblolly pine.
Badin-----	8R	Moderate	Moderate	Slight	Moderate	Loblolly pine----- Shortleaf pine----- Virginia pine ⁴ ----- Yellow-poplar----- White oak----- Scarlet oak----- Chestnut oak-----	80 68 72 --- 66 65 66	110 106 112 --- 48 47 48	Loblolly pine, shortleaf pine.
WcB ⁵ : Wakulla-----	5S	Slight	Moderate	Moderate	Slight	Longleaf pine----- Loblolly pine----- Shortleaf pine----- Blackjack oak----- Post oak-----	66 73 69 --- ---	70 98 108 --- ---	Loblolly pine, longleaf pine.
Candor-----	4S	Slight	Moderate	Moderate	Slight	Longleaf pine----- Loblolly pine----- Turkey oak----- Blackjack oak----- Post oak-----	58 --- --- --- ---	52 --- --- --- ---	Longleaf pine, loblolly pine.

¹ The number in the ordination symbol denotes potential productivity, in cubic meters per hectare per year, for a group or range of site indices for the indicator species (first tree listed under "Common trees"). One cubic meter per hectare per year equals 14.3 cubic feet per acre per year.

² Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

³ If hardwoods are desired on a forest site, the natural reproduction (seeds and sprouts) of acceptable species should be used. Special site preparation techniques may be needed. Planting hardwoods on a specific site should be based on the recommendations of a forester.

⁴ Site indices were assigned using available plot data based on native stands. Where available plot data was insufficient, indices for some species were derived from a comparison curve (Olson & Della-Bianca, USFS, SEFES Pap. 104). Where no data existed, the site index was based on data from soils with similar properties. Eroded phases were reduced by one productivity class. Site indices for some species on Johnston and Riverview soils were based on available data and SITEQUAL (Computerized Site Evaluation, USFS, Gen. Tech. Rep. SO-62, July 1986).

⁵ See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AaB----- Ailey	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
AcB----- Ailey	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
AcC----- Ailey	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: slope, droughty.
AgC----- Ailey	Moderate: slope, small stones, percs slowly.	Moderate: slope, too sandy, small stones.	Severe: slope, small stones.	Moderate: too sandy.	Moderate: small stones, droughty, slope.
AgD----- Ailey	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: too sandy, slope.	Severe: slope.
AuB*: Ailey-----	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
Urban land.					
AuC*: Ailey-----	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: slope, droughty.
Urban land.					
BcB----- Badin	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight-----	Moderate: small stones, large stones.
BgC*: Badin-----	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, large stones, slope.
Goldston-----	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.	Severe: large stones, depth to rock.
CaC*: Candor-----	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
Wakulla-----	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
ChA----- Chewacla	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
CrB----- Creedmoor	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
CzD*: Cullen-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Wynott-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
DaB2----- Davidson	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
DaC2----- Davidson	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
EmD*: Enon-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Mayodan-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: large stones, slope.
EzB*: Enon-----	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight-----	Slight.
Wynott-----	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, depth to rock.	Slight-----	Moderate: depth to rock.
EzC*: Enon-----	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, large stones.
Wynott-----	Moderate: slope, small stones, percs slowly.	Moderate: slope, small stones, percs slowly.	Severe: slope, small stones.	Slight-----	Moderate: small stones, large stones, slope.
FaB2----- Faceville	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
GdD*: Goldston-----	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: large stones, slope, depth to rock.
Badin-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HsA----- Hornsboro	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
JmA----- Johnston	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
MaC----- Masada	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
MaD----- Masada	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
MbB2----- Mayodan	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
MbC2----- Mayodan	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
MbD----- Mayodan	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
MdD----- Mayodan	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: large stones, slope.	Severe: large stones, slope.
MeB2*: Mayodan-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
Exway-----	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, depth to rock.	Slight-----	Moderate: large stones, depth to rock.
MeC2*: Mayodan-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
Exway-----	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: large stones, slope, depth to rock.
MnB----- McQueen	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
NoA----- Norfolk	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
NoB----- Norfolk	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: droughty.
OrA----- Orangeburg	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
OrB----- Orangeburg	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PaC----- Pacolet	Moderate-----	Moderate-----	Severe: slope, small stones.	Slight-----	Moderate.
PaD----- Pacolet	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
PcA----- Paxville	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
PeA, PeB----- Peawick	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
PfA----- Peawick	Severe: flooding, percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
PoA, PoB----- Pelion	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: droughty.
PoC----- Pelion	Severe: wetness.	Moderate: slope, wetness.	Severe: slope, wetness.	Moderate: wetness.	Moderate: droughty, slope.
PrB*: Pelion-----	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: droughty.
Urban land.					
PrC*: Pelion-----	Severe: wetness.	Moderate: slope, wetness.	Severe: slope, wetness.	Moderate: wetness.	Moderate: droughty, slope.
Urban land.					
PsC----- Pinkston	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Severe: large stones.	Severe: large stones.
Pt*. Pits					
RvA----- Riverview	Severe: flooding.	Slight-----	Moderate: flooding.	Slight-----	Moderate: flooding.
TbA----- Turbeville	Slight-----	Slight-----	Moderate: small stones.	Slight-----	Slight.
TbB----- Turbeville	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
Ud. Udorthents					
Ur*. Urban land					

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
UwB2----- Uwharrie	Slight-----	Slight-----	Moderate: slope.	Severe: erodes easily.	Slight.
UwC2----- Uwharrie	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
UwD----- Uwharrie	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
UxB2*: Uwharrie-----	Slight-----	Slight-----	Moderate: slope.	Severe: erodes easily.	Slight.
Badin-----	Slight-----	Slight-----	Moderate: slope, depth to rock, small stones.	Slight-----	Moderate: depth to rock.
UxC2*: Uwharrie-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Badin-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope, depth to rock.
UxD*: Uwharrie-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Badin-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
WcB*: Wakulla-----	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Candor-----	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
WuB*: Wakulla-----	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Candor-----	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Urban land.					

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AaB, AcB----- Ailey	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
AcC, AgC----- Ailey	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
AgD----- Ailey	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
AuB*: Ailey-----	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
Urban land.										
AuC*: Ailey-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Urban land.										
BcB----- Badin	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
BgC*: Badin-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Goldston-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
CaC*: Candor-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Wakulla-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
ChA----- Chewacla	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
CrB----- Creedmoor	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CzD*: Cullen-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Wynott-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
DaB2----- Davidson	Good	Good	Good	Good	Fair	Poor	Very poor.	Good	Good	Poor.
DaC2----- Davidson	Fair	Good	Good	Good	Fair	Very poor.	Very poor.	Good	Fair	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
EmD*:										
Enon-----	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Very poor.	Good	Very poor.
Mayodan-----	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
EzB*:										
Enon-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Wynott-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EzC*:										
Enon-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Wynott-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FaB2-----	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Faceville										
GdD*:										
Goldston-----	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Badin-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
HsA-----	Fair	Good	Good	Good	Good	Good	Good	Good	Good	Good.
Hornsboro										
JmA-----	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Johnston										
MaC-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Masada										
MaD-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Masada										
MbB2-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Mayodan										
MbC2-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Mayodan										
MbD-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Mayodan										
MdD-----	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Mayodan										
MeB2*:										
Mayodan-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
MeB2*: Exway-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MeC2*: Mayodan-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Exway-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MnB----- McQueen	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NoA, NoB----- Norfolk	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OrA, OrB----- Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PaC----- Pacolet	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PaD----- Pacolet	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PcA----- Paxville	Very poor.	Very poor.	Very poor.	Fair	Poor	Good	Good	Very poor.	Poor	Good.
PeA, PeB, PfA----- Peawick	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PoA----- Pelion	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PoB----- Pelion	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PoC----- Pelion	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PrB*: Pelion-----	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Urban land.										
PrC*: Pelion-----	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Urban land.										
PsC----- Pinkston	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Pt*. Pits										

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
RvA----- Riverview	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
TbA----- Turbeville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
TbB----- Turbeville	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ud. Udorthents										
Ur*. Urban land										
UwB2----- Uwharrie	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UwC2----- Uwharrie	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
UwD----- Uwharrie	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
UxB2*: Uwharrie-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Badin-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
UxC2*: Uwharrie-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Badin-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
UxD*: Uwharrie-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Badin-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
WcB*: Wakulla-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Candor-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
WuB*: Wakulla-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Candor-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Urban land.										

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AaB----- Ailey	Severe: cutbanks cave.	Slight-----	Moderate: wetness.	Slight-----	Slight-----	Moderate: droughty.
AcB----- Ailey	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: droughty.
AcC----- Ailey	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.
AgC----- Ailey	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.
AgD----- Ailey	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
AuB*: Ailey----- Urban land.	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: droughty.
AuC*: Ailey----- Urban land.	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.
BcB----- Badin	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: small stones, large stones.
BgC*: Badin-----	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: small stones, large stones, slope.
Goldston-----	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, large stones.	Severe: large stones, depth to rock.
CaC*: Candor-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
Wakulla-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ChA----- Chewacla	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
CrB----- Creedmoor	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
CzD*: Cullen-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Wynott-----	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
DaB2----- Davidson	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength.	Slight.
DaC2----- Davidson	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
EmD*: Enon-----	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
Mayodan-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: large stones, slope.
EzB*: Enon-----	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
Wynott-----	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: depth to rock.
EzC*: Enon-----	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: small stones, large stones.
Wynott-----	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: small stones, large stones, slope.
FaB2----- Faceville	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
GdD*: Goldston-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope, depth to rock.
Badin-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
HsA----- Hornsboro	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
JmA----- Johnston	Severe: cutbanks cave, excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding.	Severe: ponding, flooding.
MaC----- Masada	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
MaD----- Masada	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
MbB2----- Mayodan	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
MbC2----- Mayodan	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
MbD----- Mayodan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
MdD----- Mayodan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: large stones, slope.
MeB2*: Mayodan-----	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Exway-----	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: large stones, depth to rock.
MeC2*: Mayodan-----	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
Exway-----	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: large stones, slope, depth to rock.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MnB----- McQueen	Moderate: too clayey, wetness.	Moderate: shrink-swell.	Moderate: wetness.	Moderate: shrink-swell.	Severe: low strength.	Slight.
NoA----- Norfolk	Moderate: wetness.	Slight-----	Moderate: wetness.	Slight-----	Slight-----	Moderate: droughty.
NoB----- Norfolk	Moderate: wetness.	Slight-----	Moderate: wetness.	Moderate: slope.	Slight-----	Moderate: droughty.
OrA----- Orangeburg	Slight-----	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
OrB----- Orangeburg	Slight-----	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
PaC----- Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate.
PaD----- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PcA----- Paxville	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
PeA, PeB----- Peawick	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
PfA----- Peawick	Severe: wetness.	Severe: flooding, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
PoA, PoB----- Pelion	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: droughty.
PoC----- Pelion	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Moderate: wetness, slope.	Moderate: droughty, slope.
PrB*: Pelion----- Urban land.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: droughty.
PrC*: Pelion----- Urban land.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Moderate: wetness, slope.	Moderate: droughty, slope.
PsC----- Pinkston	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, large stones.	Severe: large stones.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Pt*. Pits						
RvA----- Riverview	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
TbA----- Turbeville	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
TbB----- Turbeville	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Ud. Udorthents						
Ur*. Urban land						
UwB2----- Uwharrie	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
UwC2----- Uwharrie	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
UwD----- Uwharrie	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
UxB2*: Uwharrie-----	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Badin-----	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: depth to rock.
UxC2*: Uwharrie-----	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
Badin-----	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
UxD*: Uwharrie-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Badin-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
WcB*: Wakulla-----	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Severe: droughty.
Candor-----	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Severe: droughty.
WuB*: Wakulla-----	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Severe: droughty.
Candor-----	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Severe: droughty.
Urban land.						

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AaB, AcB----- Ailey	Severe: percs slowly.	Severe: seepage.	Slight-----	Slight-----	Good.
AcC, AgC----- Ailey	Severe: percs slowly.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
AgD----- Ailey	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.
AuB*: Ailey-----	Severe: percs slowly.	Severe: seepage.	Slight-----	Slight-----	Good.
Urban land.					
AuC*: Ailey-----	Severe: percs slowly.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Urban land.					
BcB----- Badin	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
BgC*: Badin-----	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
Goldston-----	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock.	Poor: depth to rock, small stones.
CaC*: Candor-----	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Wakulla-----	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage.
ChA----- Chewacla	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CrB----- Creedmoor	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
CzD*: Cullen-----	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Wynott-----	Severe: depth to rock, percs slowly, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
DaB2----- Davidson	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
DaC2----- Davidson	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
EmD*: Enon-----	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Mayodan-----	Severe: slope.	Severe: slope, large stones.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
EzB*: Enon-----	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
Wynott-----	Severe: depth to rock, percs slowly.	Severe: seepage, depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
EzC*: Enon-----	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
Wynott-----	Severe: depth to rock, percs slowly.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
FaB2----- Faceville	Slight-----	Moderate: seepage, slope.	Moderate: too clayey.	Good-----	Fair: too clayey.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
GdD*: Goldston-----	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Badin-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
HsA----- Hornsboro	Severe: wetness, percs slowly.	Slight-----	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
JmA----- Johnston	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding.
MaC----- Masada	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
MaD----- Masada	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
MbB2----- Mayodan	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
MbC2----- Mayodan	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
MbD----- Mayodan	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
MdD----- Mayodan	Severe: slope.	Severe: slope, large stones.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
MeB2*: Mayodan-----	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
Exway-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
MeC2*: Mayodan-----	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
Exway-----	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
MnB----- McQueen	Severe: percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Slight-----	Poor: too clayey.
NoA, NoB----- Norfolk	Moderate: wetness, percs slowly.	Moderate: seepage, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
OrA----- Orangeburg	Slight-----	Moderate: seepage.	Slight-----	Slight-----	Good.
OrB----- Orangeburg	Slight-----	Moderate: seepage, slope.	Slight-----	Slight-----	Good.
PaC----- Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
PaD----- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
PcA----- Paxville	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding.
PeA----- Peawick	Severe: wetness, percs slowly.	Slight-----	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
PeB----- Peawick	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
PfA----- Peawick	Severe: wetness, percs slowly.	Slight-----	Severe: wetness, too clayey.	Moderate: flooding, wetness.	Poor: too clayey, hard to pack.
PoA, PoB----- Pelion	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
PoC----- Pelion	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
PrB*: Pelion-----	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PrB*: Urban land.					
PrC*: Pelion-----	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Urban land.					
PsC----- Pinkston	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, small stones.
Pt*. Pits					
RvA----- Riverview	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Fair: thin layer.
TbA----- Turbeville	Moderate: percs slowly.	Moderate: seepage.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack, small stones.
TbB----- Turbeville	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack, small stones.
Ud. Udorthents					
Ur*. Urban land					
UwB2----- Uwharrie	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
UwC2----- Uwharrie	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
UwD----- Uwharrie	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
UxB2*: Uwharrie-----	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight-----	Poor: too clayey, hard to pack.
Badin-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
UxC2*: Uwharrie-----	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
Badin-----	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
UxD*: Uwharrie-----	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Badin-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
WcB*: Wakulla-----	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
Candor-----	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
WuB*: Wakulla-----	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
Candor-----	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Urban land.					

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AaB----- Ailey	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
AcB----- Ailey	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
AcC----- Ailey	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too sandy.
AgC----- Ailey	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
AgD----- Ailey	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
AuB*: Ailey-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
Urban land.				
AuC*: Ailey-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too sandy.
Urban land.				
BcB----- Badin	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
BgC*: Badin-----	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Goldston-----	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
CaC*: Candor-----	Good-----	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
Wakulla-----	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
ChA----- Chewacla	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CrB----- Creedmoor	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
CzD*: Cullen-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Wynott-----	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
DaB2, DaC2----- Davidson	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
EmD*: Enon-----	Poor: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
Mayodan-----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
EzB*: Enon-----	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Wynott-----	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
EzC*: Enon-----	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Wynott-----	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
FaB2----- Faceville	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
GdD*: Goldston-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
GdD*: Badin-----	Poor: depth to rock, slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
HsA----- Hornsboro	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
JmA----- Johnston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
MaC----- Masada	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, too clayey, small stones.
MaD----- Masada	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, too clayey, small stones.
MbB2, MbC2----- Mayodan	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
MbD----- Mayodan	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
MdD----- Mayodan	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
MeB2*, MeC2*: Mayodan-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Exway-----	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
MnB----- McQueen	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
NoA, NoB----- Norfolk	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
OrA, OrB----- Orangeburg	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
PaC----- Pacolet	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
PaD----- Pacolet	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor.
PcA----- Paxville	Poor: wetness.	Improbable: excess fines.	Improbable: too sandy.	Poor: wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PeA, PeB, PFA----- Peawick	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
PoA, PoB----- Pelion	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, thin layer.
PoC----- Pelion	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, thin layer, slope.
PrB*: Pelion-----	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, thin layer.
Urban land.				
PrC*: Pelion-----	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, thin layer, slope.
Urban land.				
PsC----- Pinkston	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Pt*. Pits				
RvA----- Riverview	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer.
TbA, TbB----- Turbeville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
Ud. Udorthents				
Ur*. Urban land				
UwB2, UwC2----- Uwharrie	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
UwD----- Uwharrie	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
UxB2*, UxC2*: Uwharrie-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
UxB2*, UxC2*: Badin-----	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
UxD*: Uwharrie-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Badin-----	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
WcB*: Wakulla-----	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
Candor-----	Good-----	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
WuB*: Wakulla-----	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
Candor-----	Good-----	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
Urban land.				

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AaB, AcB----- Ailey	Moderate: seepage, slope.	Slight-----	Deep to water	Droughty, percs slowly, slope.	Too sandy, percs slowly.	Droughty, rooting depth.
AcC----- Ailey	Severe: slope.	Slight-----	Deep to water	Droughty, percs slowly, slope.	Slope, too sandy, percs slowly.	Slope, droughty, rooting depth.
AgC, AgD----- Ailey	Severe: slope.	Slight-----	Deep to water	Slope, droughty, fast intake.	Slope, soil blowing, percs slowly.	Slope, droughty, rooting depth.
AuB*: Ailey-----	Moderate: seepage, slope.	Slight-----	Deep to water	Droughty, percs slowly, slope.	Too sandy, percs slowly.	Droughty, rooting depth.
Urban land.						
AuC*: Ailey-----	Severe: slope.	Slight-----	Deep to water	Droughty, percs slowly, slope.	Slope, too sandy, percs slowly.	Slope, droughty, rooting depth.
Urban land.						
BcB----- Badin	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
BgC*: Badin-----	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Goldston-----	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
CaC*: Candor-----	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
Wakulla-----	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
ChA----- Chewacla	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Flooding-----	Wetness, flooding.	Wetness-----	Wetness.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
CrB----- Creedmoor	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness, soil blowing.	Wetness, soil blowing.	Rooting depth, percs slowly.
CzD*: Cullen-----	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing.	Slope-----	Slope.
Wynott-----	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing, percs slowly.	Slope, depth to rock, soil blowing.	Slope, depth to rock, percs slowly.
DaB2----- Davidson	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope-----	Favorable-----	Favorable.
DaC2----- Davidson	Severe: slope.	Severe: hard to pack.	Deep to water	Slope-----	Slope-----	Slope.
EmD*: Enon-----	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Slope, percs slowly.	Slope, percs slowly.
Mayodan-----	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, droughty.	Slope, large stones.	Large stones, slope, droughty.
EzB*: Enon-----	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Percs slowly---	Percs slowly.
Wynott-----	Moderate: depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing, percs slowly.	Depth to rock, soil blowing.	Depth to rock, percs slowly.
EzC*: Enon-----	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Slope, percs slowly.	Slope, percs slowly.
Wynott-----	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
FaB2----- Faceville	Moderate: seepage, slope.	Slight-----	Deep to water	Slope-----	Erodes easily	Erodes easily.
GdD*: Goldston-----	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty, depth to rock.
Badin-----	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
HsA----- Hornsboro	Slight-----	Severe: hard to pack, wetness.	Percs slowly---	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
JmA----- Johnston	Severe: seepage.	Severe: piping, ponding.	Ponding, flooding.	Ponding, flooding.	Ponding-----	Wetness.
MaC, MaD----- Masada	Severe: slope.	Moderate: thin layer, hard to pack.	Deep to water	Slope, rooting depth.	Slope, soil blowing.	Slope.
MbB2----- Mayodan	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope-----	Favorable-----	Favorable.
MbC2----- Mayodan	Severe: slope.	Severe: hard to pack.	Deep to water	Slope-----	Slope-----	Slope.
MbD----- Mayodan	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.
MdD----- Mayodan	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, droughty.	Slope, large stones.	Large stones, slope, droughty.
MeB2*: Mayodan-----	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope-----	Favorable-----	Favorable.
Exway-----	Moderate: depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, depth to rock.	Depth to rock	Depth to rock.
MeC2*: Mayodan-----	Severe: slope.	Severe: hard to pack.	Deep to water	Slope-----	Slope-----	Slope.
Exway-----	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
MnB----- McQueen	Moderate: slope.	Moderate: piping.	Deep to water	Percs slowly, slope, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
NoA----- Norfolk	Moderate: seepage.	Severe: piping.	Deep to water	Fast intake, soil blowing.	Soil blowing---	Favorable.
NoB----- Norfolk	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, fast intake.	Soil blowing---	Favorable.
OrA----- Orangeburg	Moderate: seepage.	Moderate: piping.	Deep to water	Fast intake---	Soil blowing---	Favorable.
OrB----- Orangeburg	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Fast intake, slope.	Soil blowing---	Favorable.
PaC, PaD----- Pacolet	Severe: slope.	Severe: piping.	Deep to water	Slope-----	Slope-----	Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
PcA----- Paxville	Severe: seepage.	Severe: piping, ponding.	Ponding-----	Ponding-----	Ponding, soil blowing.	Wetness.
PeA----- Peawick	Slight-----	Severe: hard to pack.	Percs slowly---	Wetness, soil blowing.	Erodes easily, wetness.	Erodes easily, percs slowly.
PeB----- Peawick	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness, soil blowing.	Erodes easily, wetness.	Erodes easily, percs slowly.
PfA----- Peawick	Slight-----	Severe: hard to pack.	Percs slowly---	Wetness, soil blowing.	Erodes easily, wetness.	Erodes easily, percs slowly.
PoA----- Pelion	Moderate: seepage.	Severe: seepage, piping.	Percs slowly---	Droughty, fast intake.	Soil blowing---	Droughty.
PoB----- Pelion	Moderate: seepage, slope.	Severe: seepage, piping.	Percs slowly, slope.	Droughty, fast intake.	Soil blowing---	Droughty.
PoC----- Pelion	Severe: slope.	Severe: seepage, piping.	Percs slowly, slope.	Droughty, fast intake.	Slope, soil blowing.	Slope, droughty.
PrB*: Pelion-----	Moderate: seepage, slope.	Severe: seepage, piping.	Percs slowly, slope.	Droughty, fast intake.	Soil blowing---	Droughty.
Urban land.						
PrC*: Pelion-----	Severe: slope.	Severe: seepage, piping.	Percs slowly, slope.	Droughty, fast intake.	Slope, soil blowing.	Slope, droughty.
Urban land.						
PsC----- Pinkston	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Pt*. Pits						
RvA----- Riverview	Severe: seepage.	Severe: piping.	Deep to water	Flooding-----	Favorable-----	Favorable.
TbA----- Turbeville	Moderate: seepage.	Moderate: hard to pack.	Deep to water	Favorable-----	Favorable-----	Favorable.
TbB----- Turbeville	Moderate: seepage, slope.	Moderate: hard to pack.	Deep to water	Slope-----	Favorable-----	Favorable.
Ud. Udorthents						

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Ur*. Urban land						
UwB2----- Uwharrie	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
UwC2, UwD----- Uwharrie	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
UxB2*: Uwharrie-----	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Badin-----	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
UxC2*, UxD*: Uwharrie-----	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Badin-----	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
WcB*: Wakulla-----	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
Candor-----	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
WuB*: Wakulla-----	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
Candor-----	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
Urban land.						

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO								
							4	10	40	200		
	In				Pct	Pct					Pct	
AaB----- Ailey	0-23	Sand-----	SP-SM	A-2, A-3	0	0	85-100	75-95	50-75	5-12	---	NP
	23-40	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	90-100	75-100	60-90	30-40	20-40	3-16
	40-46	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	90-100	75-100	55-90	20-40	20-40	3-15
	46-65	Coarse sandy loam, sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	85-100	75-100	50-85	15-40	<40	NP-14
AcB, AcC----- Ailey	0-25	Loamy sand----	SM, SP-SM	A-2, A-3	0	0	85-100	75-100	50-80	5-20	---	NP
	25-33	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	90-100	75-100	60-90	30-40	20-40	3-16
	33-46	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	90-100	75-100	55-90	20-50	20-40	3-16
	46-65	Coarse sandy loam, sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	85-100	75-100	50-85	15-40	<40	NP-14
AgC, AgD----- Ailey	0-22	Gravelly loamy sand.	SM, SP-SM	A-2, A-3	0	0-5	75-85	60-75	40-70	5-20	---	NP
	22-38	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	90-100	75-100	60-90	30-40	20-40	3-16
	38-47	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	90-100	75-100	55-90	20-50	20-40	3-16
	47-65	Coarse sandy loam, sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	85-100	75-100	50-85	15-40	<40	NP-14
AuB*, AuC*: Ailey-----	0-25	Loamy sand----	SM, SP-SM	A-2, A-3	0	0	85-100	75-100	50-80	5-20	---	NP
	25-33	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	90-100	75-100	60-90	30-40	20-40	3-16
	33-46	Sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	90-100	75-100	55-90	20-50	20-40	3-16
	46-65	Coarse sandy loam, sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	85-100	75-100	50-85	15-40	<40	NP-14
Urban land.												

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
BcB----- Badin	0-5	Channery silt loam.	ML, SM, SC-SM, GM	A-4, A-6, A-2-4	0-1	0-10	60-100	50-85	45-85	30-80	25-50	4-20
	5-31	Silty clay, silty clay loam, channery silty clay loam.	CL, CH, ML	A-6, A-7	0	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	31-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
BgC*: Badin-----	0-5	Channery silt loam.	ML, SM, SC-SM, GM	A-4, A-6, A-2-4	0-1	0-10	60-100	50-85	45-85	30-80	25-50	4-20
	5-31	Silty clay, silty clay loam, channery silty clay loam.	CL, CH, ML	A-6, A-7	0	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	31-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Goldston-----	0-3	Very channery silt loam.	GM, SM, ML	A-2-4, A-4, A-1-b	0	20-50	40-80	30-80	25-80	20-60	20-40	NP-10
	3-15	Very channery silt loam, very channery very fine sandy loam.	GM, SM, ML	A-2-4, A-4, A-1-b	0-5	20-50	40-80	30-80	25-80	20-60	20-40	NP-10
	15-25	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
CaC*: Candor-----	0-23	Sand-----	SM, SP-SM	A-2, A-3, A-2-4	0	0-2	98-100	96-100	55-90	5-15	---	NP
	23-35	Loamy sand----	SM, SP-SM	A-2, A-2-4	0	0-2	98-100	96-100	63-90	10-25	---	NP
	35-62	Sand-----	SM, SP-SM	A-2, A-3	0	0-7	90-100	90-100	55-90	5-15	---	NP
	62-80	Sandy loam, sandy clay loam.	SC, SC-SM, SM	A-2, A-4, A-6, A-7	0	0-7	90-100	90-100	55-90	25-49	<45	NP-25
Wakulla-----	0-26	Sand-----	SP, SP-SM	A-3	0	0	100	100	55-90	4-10	---	NP
	26-39	Loamy sand, loamy fine sand, loamy coarse sand.	SM, SP-SM	A-2	0	0	100	100	55-85	10-25	---	NP
	39-85	Sand, fine sand, coarse sand.	SM, SP-SM, SP	A-2, A-3	0	0	100	100	50-70	4-15	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
ChA----- Chewacla	0-8	Loam-----	ML, CL, CL-ML	A-4, A-6, A-7	0	0	98-100	95-100	70-100	55-90	25-49	4-20
	8-34	Sandy clay loam, loam, sandy loam.	SM, SC-SM, ML, CL	A-4, A-7-6, A-6	0	0	96-100	95-100	60-100	36-70	20-45	2-15
	34-66	Silt loam, clay loam, silty clay loam.	ML, MH, CL, CH	A-4, A-6, A-7	0	0	85-100	75-100	60-100	51-98	22-61	4-28
CrB----- Creedmoor	0-11	Fine sandy loam.	SM, SC-SM	A-4, A-2	0	0-3	98-100	95-100	70-90	30-49	<25	NP-7
	11-16	Sandy clay loam, clay loam, loam, silty clay loam.	CL	A-7, A-6	0	0-3	98-100	95-100	85-95	60-80	35-50	20-30
	16-54	Clay, silty clay, clay loam, sandy clay.	CH	A-7	0	0-3	98-100	95-100	85-97	70-95	51-79	25-49
	54-62	Silt loam, sandy clay loam, silty clay loam, sandy loam.	ML, CL-ML, SM, SC	A-7, A-6, A-4	0	0-5	98-100	95-100	85-98	45-90	25-49	4-21
CzD*: Cullen-----	0-3	Fine sandy loam.	CL, CL-ML, SC	A-4, A-6	0	0	90-100	75-100	60-85	35-55	25-35	7-15
	3-32	Clay, clay loam.	MH, ML	A-7	0	0	90-100	75-100	75-100	65-95	45-80	15-35
	32-42	Clay, clay loam, silty clay loam.	CL, CH	A-7, A-6	0	0	90-100	75-100	75-100	65-95	35-60	15-30
	42-60	Clay loam, loam, silt loam.	CL, ML	A-7, A-6, A-4	0	0	50-100	40-100	35-100	30-85	30-50	7-25
Wynott-----	0-5	Fine sandy loam.	SM, SC-SM, SC	A-2, A-4	0	0-5	85-100	85-100	60-85	25-55	15-30	NP-10
	5-10	Loam, clay loam.	CL, CL-ML	A-4, A-6	0	0-5	85-100	85-100	70-90	50-80	20-50	4-25
	10-22	Clay, clay loam, silty clay.	CL, CH	A-7-6	0	0-5	85-100	85-100	80-100	65-95	40-90	25-65
	22-27	Sandy clay, sandy clay loam, clay loam, loam.	CL, SC	A-6	0	0-5	85-100	85-100	70-95	35-85	25-40	7-25
	27-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
DaB2, DaC2---- Davidson	0-7	Clay loam-----	CL, SC, CL-ML, SC-SM	A-6, A-4	0	0	94-100	84-100	75-95	40-70	25-40	5-18
	7-56	Clay-----	CL, CH, ML, MH	A-7, A-6	0	0	96-100	95-100	85-100	65-85	35-65	12-33
	56-75	Clay, clay loam, sandy clay loam.	CL, ML, MH	A-4, A-6, A-7	0	0	95-100	90-100	75-100	50-85	20-65	7-30

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
EmD*: Enon-----	0-6	Gravelly loam	SM, SC	A-1, A-2-4	5-15	5-15	60-95	55-90	30-70	20-35	<30	NP-10
	6-39	Clay, clay loam.	CH, CL	A-7-6	0	0-10	85-100	80-100	65-98	55-95	40-75	25-49
	39-60	Variable-----	---	---	---	---	---	---	---	---	---	---
Mayodan-----	0-9	Sandy loam----	SM, SC-SM	A-1-b, A-2-4	0-5	5-15	50-80	50-75	40-65	15-35	<30	NP-7
	9-24	Clay, sandy clay, silty clay.	CL, MH, CH, SC	A-7	0	0-5	95-100	90-100	80-100	40-95	40-80	15-45
	24-38	Clay loam, sandy clay loam, silty clay loam.	CL, ML	A-4, A-6, A-7-6	0	0-2	95-100	95-100	90-100	50-98	25-50	7-26
	38-62	Variable-----	---	---	---	---	---	---	---	---	---	---
EzB*: Enon-----	0-7	Loam-----	ML, CL-ML, CL	A-4, A-6	0	0-5	95-100	90-100	75-95	51-80	20-40	3-20
	7-33	Clay loam, clay.	CH, CL	A-7-6	0	0-5	85-100	80-100	75-98	65-95	40-90	25-65
	33-60	Variable-----	---	---	---	---	---	---	---	---	---	---
Wynott-----	0-5	Fine sandy loam.	SM, SC-SM, SC	A-2, A-4	0	0-5	85-100	85-100	60-85	25-55	15-30	NP-10
	5-10	Loam, clay loam.	CL, CL-ML	A-4, A-6	0	0-5	85-100	85-100	70-90	50-80	20-50	4-25
	10-22	Clay, clay loam, silty clay.	CL, CH	A-7-6	0	0-5	85-100	85-100	80-100	65-95	40-90	25-65
	22-27	Sandy clay, sandy clay loam, clay loam, loam.	CL, SC	A-6	0	0-5	85-100	85-100	70-95	35-85	25-40	7-25
	27-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
EzC*: Enon-----	0-6	Gravelly loam	SM, SC	A-1, A-2-4	5-15	5-15	60-95	55-90	30-70	20-35	<30	NP-10
	6-39	Clay, clay loam.	CH, CL	A-7-6	0	0-10	85-100	80-100	65-98	55-95	40-75	25-49
	39-60	Variable-----	---	---	---	---	---	---	---	---	---	---
Wynott-----	0-5	Fine sandy loam.	SM, SC	A-1, A-2-4	5-15	5-15	60-95	55-90	30-70	20-35	0-30	NP-10
	5-10	Loam, clay loam.	CL, CL-ML	A-4, A-6	0	0-5	85-100	85-100	70-90	50-80	20-50	4-25
	10-22	Clay, clay loam, silty clay.	CL, CH	A-7-6	0-1	5-10	85-100	85-100	80-100	65-95	40-90	25-65
	22-27	Sandy clay, sandy clay loam, loam.	CL, SC	A-6	0	0-10	85-100	85-100	70-95	35-85	25-40	7-25
	27-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
FaB2----- Faceville	0-6	Sandy clay loam.	SM, CL-ML, ML, SC-SM	A-4	0	0	90-100	90-100	63-97	40-58	<25	NP-7
	6-63	Sandy clay, clay, clay loam.	CL, SC, CH, ML	A-6, A-7	0	0	98-100	95-100	75-99	45-72	25-52	11-25
GdD*: Goldston-----	0-3	Very channery silt loam.	GM, SM, ML	A-2-4, A-4, A-1-b	0	20-50	40-80	30-80	25-80	20-60	20-40	NP-10
	3-15	Very channery silt loam, very channery very fine sandy loam.	GM, SM, ML	A-2-4, A-4, A-1-b	0-5	20-50	40-80	30-80	25-80	20-60	20-40	NP-10
	15-25	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Badin-----	0-5	Channery silt loam.	ML, SM, SC-SM, GM	A-4, A-6, A-2-4	0-1	0-10	60-100	50-85	45-85	30-80	25-50	4-20
	5-31	Silty clay, silty clay loam, channery silty clay loam.	CL, CH, ML	A-6, A-7	0	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	31-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
HsA----- Hornsboro	0-5	Silt loam-----	ML, CL-ML, SM	A-4	0	0	99-100	93-100	85-98	42-85	<35	NP-10
	5-55	Clay, silty clay, silty clay loam.	CH, CL	A-7-6	0	0	99-100	93-100	87-99	60-91	45-70	25-50
	55-69	Sandy clay loam, clay loam, gravelly sandy clay loam.	CL, SC	A-7-6, A-6, A-2-6	0	0	99-100	57-100	40-96	22-80	30-50	18-30
	69-80	Variable-----	---	---	---	---	---	---	---	---	---	---
JmA----- Johnston	0-25	Mucky loam-----	OL, ML, CL-ML	A-4, A-5, A-7-5, A-6	0	0	100	100	90-100	51-75	20-45	2-14
	25-45	Loam, sandy loam, fine sandy loam.	ML, SM	A-2, A-4	0	0	100	100	60-100	18-65	15-35	NP-10
	45-62	Stratified loamy sand to sand.	SM, SP-SM	A-2, A-3	0	0	100	100	50-100	5-30	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
MaC, MaD----- Masada	0-6	Sandy loam----	ML, SM, SC, CL	A-4, A-6	0	0-5	90-100	75-98	60-95	35-75	<30	NP-15
	6-47	Clay loam, clay, sandy clay.	CH, CL	A-7, A-6	0	0-10	80-100	70-100	65-95	50-80	35-60	15-35
	47-70	Loam, clay loam, clay gravelly sandy clay loam, sandy clay loam.	CL, ML	A-6, A-7, A-4	0	0-10	80-100	70-100	65-95	50-80	30-45	7-20
MbB2, MbC2----- Mayodan	0-5	Sandy clay loam.	CL, SC	A-4, A-6, A-7-6	0	0-5	95-100	95-100	90-100	40-90	25-50	7-26
	5-8	Silty clay loam, clay loam, sandy clay loam.	CL, ML	A-4, A-6, A-7-6	0	0-2	95-100	95-100	90-100	50-98	25-50	7-26
	8-43	Clay, sandy clay, silty clay.	MH, CH, CL, ML	A-7	0	0-2	95-100	90-100	80-100	50-98	41-80	15-45
	43-62	Variable-----	---	---	---	---	---	---	---	---	---	---
MbD----- Mayodan	0-9	Sandy loam----	SM, ML	A-2, A-4	0	0-5	92-100	83-100	49-98	30-70	<36	NP-8
	9-24	Clay, sandy clay, silty clay.	MH, CH, CL, ML	A-7	0	0-2	95-100	90-100	80-100	50-98	41-80	15-45
	24-38	Clay loam, sandy clay loam, silty clay loam.	CL, ML	A-4, A-6, A-7-6	0	0-2	95-100	95-100	90-100	50-98	25-50	7-26
	38-62	Variable-----	---	---	---	---	---	---	---	---	---	---
MdD----- Mayodan	0-9	Sandy loam----	SM, SC-SM	A-1-b, A-2-4	0-5	0-10	80-95	75-95	40-65	25-50	<30	NP-7
	9-24	Clay, sandy clay, silty clay.	CL, MH, CH, SC	A-7	0	0-5	95-100	90-100	80-100	40-95	40-80	15-45
	24-38	Clay loam, sandy clay loam, silty clay loam.	CL, ML	A-4, A-6, A-7-6	0	0-2	95-100	95-100	90-100	50-98	25-50	7-26
	38-62	Variable-----	---	---	---	---	---	---	---	---	---	---
MeB2*, MeC2*: Mayodan-----	0-5	Sandy clay loam.	CL, SC	A-4, A-6, A-7-6	0	0-5	95-100	95-100	90-100	40-90	25-50	7-26
	5-8	Silty clay loam, clay loam, sandy clay loam.	CL, ML	A-4, A-6, A-7-6	0	0-2	95-100	95-100	90-100	50-98	25-50	7-26
	8-43	Clay, sandy clay, silty clay.	MH, CH, CL, ML	A-7	0	0-2	95-100	90-100	80-100	50-98	41-80	15-45
	43-62	Variable-----	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments	Frag- ments	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	> 10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
MeB2*, MeC2*: Exway-----	0-4	Clay loam-----	CL	A-6, A-7	0	0-10	95-100	95-100	85-100	52-90	30-49	11-25
	4-24	Silty clay loam, silty clay, clay.	CL, CH, MH	A-7	0	0-10	95-100	95-100	90-100	60-98	40-80	17-42
	24-40	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
MnB----- McQueen	0-5	Loam-----	ML, CL-ML	A-4	0	0	90-100	80-100	75-100	70-95	<40	NP-10
	5-55	Silty clay, clay loam, clay.	CL	A-7, A-6	0	0	95-100	95-100	90-100	85-98	30-50	10-25
	55-62	Clay loam, silty clay loam, sandy clay loam.	CL	A-6, A-4, A-7	0	0	95-100	95-100	90-100	60-90	28-43	8-20
NoA, NoB----- Norfolk	0-13	Loamy sand-----	SM	A-2	0	0	95-100	92-100	50-95	13-30	<20	NP
	13-16	Sandy loam, sandy clay loam, clay loam.	SC, SC-SM, CL, CL-ML	A-2, A-4, A-6	0	0	95-100	91-100	70-96	30-63	20-38	4-15
	16-75	Sandy clay loam, clay loam, sandy clay.	SC, SC-SM, CL, CL-ML	A-4, A-6, A-7-6	0	0	100	98-100	65-98	36-72	20-52	4-23
OrA, OrB----- Orangeburg	0-6	Loamy sand-----	SM	A-2	0	0	98-100	95-100	60-87	14-28	---	NP
	6-16	Sandy loam-----	SM	A-2	0	0	98-100	95-100	70-96	25-35	<30	NP-4
	16-80	Sandy clay loam, sandy loam.	SC, CL, SM, SC-SM	A-6, A-4	0	0	98-100	95-100	71-96	38-58	22-40	3-19
PaC, PaD----- Pacolet	0-7	Gravelly sandy loam.	SM	A-2	0-2	0-3	75-90	70-85	55-75	15-30	<30	NP-3
	7-25	Sandy clay, clay loam, clay.	ML, MH	A-6, A-7	0-1	0-1	80-100	80-100	60-95	51-75	38-65	11-30
	25-60	Clay loam, sandy clay loam, sandy loam.	CL-ML, SC-SM, SC, CL	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
PcA----- Paxville	0-12	Fine sandy loam.	SM, ML, SC-SM	A-2, A-4	0	0	100	100	80-98	30-60	<35	NP-7
	12-43	Sandy clay loam, sandy loam, loam.	CL-ML, CL, SC-SM, SC	A-2, A-4, A-6	0	0	100	98-100	60-98	30-60	21-40	5-15
	43-50	Sandy loam, fine sandy loam.	SM	A-2, A-3	0	0	100	98-100	60-98	15-35	<30	NP-4
	50-60	Variable-----	---	---	---	---	---	---	---	---	---	---
PeA, PeB----- Peawick	0-7	Fine sandy loam.	SM, SC, CL-ML	A-4	0	0	90-100	75-100	50-100	40-90	15-30	NP-8
	7-13	Loam, sandy clay loam.	SM, SC-SM, ML-CL	A-4, A-6, A-7-6	0	0	96-100	95-100	60-100	36-70	20-45	2-15
	13-75	Clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	0	90-100	75-100	70-100	70-95	35-80	12-50

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
PfA----- Peawick	0-9	Silt loam----	SM, SC, CL-ML	A-4	0	0	90-100	75-100	50-100	40-90	15-30	NP-8
	9-75	Clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	0	90-100	75-100	70-100	70-95	35-80	12-50
PoA, PoB, PoC- Pelion	0-13	Loamy sand----	SP, SM, SP-SM	A-2, A-3	0	0	98-100	95-100	45-85	5-30	10-25	NP
	13-29	Sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0	0	95-100	92-100	50-90	25-55	20-40	5-18
	29-41	Sandy clay loam, sandy clay, clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	0	98-100	92-100	50-90	25-60	20-47	5-26
	41-75	Sandy clay loam, sandy loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	98-100	92-100	50-90	18-60	<42	NP-22
PrB*, PrC*: Pelion-----	0-13	Loamy sand----	SP, SM, SP-SM	A-2, A-3	0	0	98-100	95-100	45-85	5-30	10-25	NP
	13-29	Sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	0	0	95-100	92-100	50-90	25-55	20-40	5-18
	29-41	Sandy clay loam, sandy clay, clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6, A-7	0	0	98-100	92-100	50-90	25-60	20-47	5-26
	41-75	Sandy clay loam, sandy loam.	SM, SC, SC-SM	A-2, A-4, A-6	0	0	98-100	92-100	50-90	18-60	<42	NP-22
Urban land.												
PsC----- Pinkston	0-2	Fine sandy loam.	SM, CL-ML	A-2-4, A-4	1-15	0-15	85-95	75-95	45-75	25-50	<20	NP-5
	2-16	Loam, fine sandy loam, silty clay loam, gravelly silt loam.	SC, CL, ML, SM	A-2, A-4, A-1	0-5	0-10	70-100	55-100	35-95	20-75	<30	NP-10
	16-32	Gravelly sandy loam, loam, silt loam.	CL, GM, ML	A-2, A-1, A-4, A-6	0-5	0-10	40-100	35-85	20-80	10-60	16-35	3-15
	32-39	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Pt*. Pits												

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO								
							4	10	40	200		
	In				Pct	Pct					Pct	
RvA----- Riverview	0-11	Loam-----	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	60-80	15-30	3-14
	11-55	Sandy clay loam, silty clay loam, loam.	CL, ML, CL-ML	A-4, A-6	0	0	100	100	90-100	60-95	20-40	3-20
	55-62	Loamy fine sand, sandy loam, sand.	SM, SC-SM	A-2, A-4	0	0	100	100	50-95	15-45	<20	NP-7
TbA, TbB----- Turbeville	0-6	Sandy loam----	SM, ML, CL-ML, SC-SM	A-2, A-4	0	0-2	80-100	75-100	50-85	25-55	<25	NP-5
	6-75	Clay loam, sandy clay, gravelly clay, clay.	CL, CH	A-7	0	0-5	80-100	50-100	50-100	45-95	45-65	20-35
Ud. Udorthents												
Ur*. Urban land												
UwB2, UwC2----- Uwharrie	0-6	Clay loam-----	CL, ML	A-6, A-7	0	0-5	90-100	90-100	90-100	70-95	30-50	10-20
	6-50	Silty clay, silty clay loam, clay.	MH, CL, CH	A-7	0	0-5	95-100	95-100	90-100	75-95	40-80	20-40
	50-62	Silty clay, silty clay loam, clay loam.	MH, CL, CH	A-7, A-6	0	0-5	90-100	90-100	90-100	70-95	30-60	10-35
	62-80	Variable-----	---	---	---	---	---	---	---	---	---	---
UwD----- Uwharrie	0-6	Loam-----	ML, CL-ML	A-4	0	0-5	90-100	90-100	85-100	60-90	25-40	NP-10
	6-45	Silty clay, silty clay loam, clay.	MH, CL, CH	A-7	0	0-5	95-100	95-100	90-100	75-95	40-80	20-40
	45-52	Silty clay, silty clay loam, clay loam.	MH, CL, CH	A-7, A-6	0	0-5	90-100	90-100	90-100	70-95	30-60	10-35
	52-60	Variable-----	---	---	---	---	---	---	---	---	---	---
UxB2*, UxC2*: Uwharrie-----	0-6	Clay loam-----	CL, ML	A-6, A-7	0	0-5	90-100	90-100	90-100	70-95	30-50	10-20
	6-50	Silty clay, silty clay loam, clay.	MH, CL, CH	A-7	0	0-5	95-100	95-100	90-100	75-95	40-80	20-40
	50-62	Silty clay, silty clay loam, clay loam.	MH, CL, CH	A-7, A-6	0	0-5	90-100	90-100	90-100	70-95	30-60	10-35
	62-80	Variable-----	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
UxB2*, UxC2*: Badin-----	0-3	Silty clay loam.	CL, ML	A-6, A-7	---	0-5	85-100	75-95	65-90	60-85	30-49	11-20
	3-23	Silty clay, silty clay loam, channery silty clay loam.	CL, CH	A-6, A-7	---	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	23-41	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	41	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
UxD*: Uwharrie-----	0-6	Loam-----	ML, CL-ML	A-4	0	0-5	90-100	90-100	85-100	60-90	25-40	NP-10
	6-45	Silty clay, silty clay loam, clay.	MH, CL, CH	A-7	0	0-5	95-100	95-100	90-100	75-95	40-80	20-40
	45-52	Silty clay, silty clay loam, clay loam.	MH, CL, CH	A-7, A-6	0	0-5	90-100	90-100	90-100	70-95	30-60	10-35
	52-60	Variable-----	---	---	---	---	---	---	---	---	---	---
Badin-----	0-5	Channery silt loam.	ML, SM, SC-SM, GM	A-4, A-6, A-2-4	0-1	0-10	60-100	50-85	45-85	30-80	25-50	4-20
	5-31	Silty clay, silty clay loam, channery silty clay loam.	CL, CH, ML	A-6, A-7	0	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	31-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
WCB*: Wakulla-----	0-26	Sand-----	SP, SP-SM	A-3	0	0	100	100	55-90	4-10	---	NP
	26-39	Loamy sand, loamy fine sand, loamy coarse sand.	SM, SP-SM	A-2	0	0	100	100	55-85	10-25	---	NP
	39-85	Sand, fine sand, coarse sand.	SM, SP-SM, SP	A-2, A-3	0	0	100	100	50-70	4-15	---	NP
Candor-----	0-23	Sand-----	SM, SP-SM	A-2, A-3, A-2-4	0	0-2	98-100	96-100	55-90	5-15	---	NP
	23-35	Loamy sand----	SM, SP-SM	A-2, A-2-4	0	0-2	98-100	96-100	63-90	10-25	---	NP
	35-62	Sand-----	SM, SP-SM	A-2, A-3	0	0-7	90-100	90-100	55-90	5-15	---	NP
	62-80	Sandy loam, sandy clay loam.	SC, SC-SM, SM	A-2, A-4, A-6, A-7	0	0-7	90-100	90-100	55-90	25-49	<45	NP-25

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments	Frag- ments	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	> 10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
WuB*: Wakulla-----	0-26	Sand-----	SP, SP-SM	A-3	0	0	100	100	55-90	4-10	---	NP
	26-39	Loamy sand, loamy fine sand, loamy coarse sand.	SM, SP-SM	A-2	0	0	100	100	55-85	10-25	---	NP
	39-85	Sand, fine sand, coarse sand.	SM, SP-SM, SP	A-2, A-3	0	0	100	100	50-70	4-15	---	NP
Candor-----	0-23	Sand-----	SM, SP-SM	A-2, A-3, A-2-4	0	0-2	98-100	96-100	55-90	5-15	---	NP
	23-35	Loamy sand----	SM, SP-SM	A-2, A-2-4	0	0-2	98-100	96-100	63-90	10-25	---	NP
	35-62	Sand-----	SM, SP-SM	A-2, A-3	0	0-7	90-100	90-100	55-90	5-15	---	NP
	62-80	Sandy loam, sandy clay loam.	SC, SC-SM, SM	A-2, A-4, A-6, A-7	0	0-7	90-100	90-100	55-90	25-49	<45	NP-25
Urban land.												

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodi- bility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
AaB----- Ailey	0-23	3-8	1.40-1.55	6.0-20	0.03-0.05	4.5-6.5	Low-----	0.10	4	1	.5-1
	23-40	15-35	1.55-1.70	0.6-2.0	0.09-0.12	4.5-5.5	Low-----	0.24			
	40-46	18-32	1.70-1.80	0.06-0.2	0.06-0.10	4.5-5.5	Low-----	0.24			
	46-65	15-30	1.80-1.95	0.06-0.2	0.04-0.08	4.5-5.5	Low-----	0.15			
AcB, AcC----- Ailey	0-25	5-10	1.35-1.45	6.0-20	0.03-0.05	4.5-6.5	Low-----	0.15	4	2	.5-1
	25-33	15-35	1.55-1.70	0.6-2.0	0.09-0.12	4.5-5.5	Low-----	0.24			
	33-46	18-35	1.70-1.80	0.06-0.2	0.06-0.10	4.5-5.5	Low-----	0.24			
	46-65	15-30	1.80-1.95	0.06-0.2	0.04-0.08	4.5-5.5	Low-----	0.15			
AgC, AgD----- Ailey	0-22	5-10	1.35-1.45	6.0-20	0.03-0.05	4.5-6.5	Low-----	0.10	4	2	.5-1
	22-38	15-35	1.55-1.70	0.6-2.0	0.09-0.12	4.5-5.5	Low-----	0.24			
	38-47	18-35	1.70-1.80	0.06-0.2	0.06-0.10	4.5-5.5	Low-----	0.20			
	47-65	15-30	1.80-1.95	0.06-0.2	0.04-0.08	4.5-5.5	Low-----	0.15			
AuB*, AuC*: Ailey-----	0-25	5-10	1.35-1.45	6.0-20	0.03-0.05	4.5-6.5	Low-----	0.15	4	2	.5-1
	25-33	15-35	1.55-1.70	0.6-2.0	0.09-0.12	4.5-5.5	Low-----	0.24			
	33-46	18-35	1.70-1.80	0.06-0.2	0.06-0.10	4.5-5.5	Low-----	0.24			
	46-65	15-30	1.80-1.95	0.06-0.2	0.04-0.08	4.5-5.5	Low-----	0.15			
Urban land.											
BcB----- Badin	0-5	10-27	1.40-1.60	0.6-2.0	0.14-0.20	3.5-6.5	Low-----	0.15	3	5	1-2
	5-31	35-55	1.30-1.50	0.6-2.0	0.14-0.19	3.5-5.5	Moderate----	0.24			
	31-60	---	---	---	---	---	-----	---			
BgC*: Badin-----	0-5	10-27	1.40-1.60	0.6-2.0	0.14-0.20	3.5-6.5	Low-----	0.15	3	5	1-2
	5-31	35-55	1.30-1.50	0.6-2.0	0.14-0.19	3.5-5.5	Moderate----	0.24			
	31-60	---	---	---	---	---	-----	---			
Goldston-----	0-3	5-25	1.40-1.60	2.0-6.0	0.06-0.12	3.5-6.5	Low-----	0.05	2	8	.5-2
	3-15	5-27	1.40-1.60	2.0-6.0	0.06-0.12	3.5-6.0	Low-----	0.05			
	15-25	---	---	---	---	---	-----	---			
	25	---	---	---	---	---	-----	---			
CaC*: Candor-----	0-23	1-4	1.60-1.70	6.0-20	0.02-0.06	3.5-6.5	Low-----	0.10	5	1	.5-1
	23-35	6-12	1.55-1.70	6.0-20	0.06-0.10	3.5-5.5	Low-----	0.10			
	35-62	1-4	1.60-1.70	6.0-20	0.02-0.05	3.5-5.5	Low-----	0.10			
	62-80	10-35	1.35-1.60	0.6-2.0	0.12-0.16	3.5-5.5	Low-----	0.20			
Wakulla-----	0-26	1-4	1.45-1.60	6.0-20	<0.05	4.5-6.5	Low-----	0.10	5	1	.5-1
	26-39	2-8	1.45-1.60	6.0-20	0.05-0.10	4.5-6.0	Low-----	0.10			
	39-85	2-8	1.45-1.60	6.0-20	<0.05	4.5-6.0	Low-----	0.10			
ChA----- Chewacla	0-8	10-27	1.30-1.60	0.6-2.0	0.15-0.24	4.5-6.5	Low-----	0.28	5	5	1-4
	8-34	18-35	1.30-1.60	0.6-2.0	0.12-0.20	4.5-6.5	Low-----	0.28			
	34-66	18-35	1.30-1.50	0.6-2.0	0.15-0.24	4.5-7.8	Low-----	0.32			
CrB----- Creedmoor	0-11	7-20	1.55-1.70	2.0-6.0	0.10-0.14	3.5-6.5	Low-----	0.28	3	3	.5-2
	11-16	20-35	1.45-1.65	0.2-0.6	0.13-0.15	3.5-5.5	Moderate----	0.32			
	16-54	35-60	1.30-1.50	<0.06	0.13-0.15	3.5-5.5	High-----	0.32			
	54-62	5-35	1.60-1.95	<0.06	0.10-0.14	3.5-5.5	Low-----	0.37			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Wind erodi- bility group	Organic matter Pct
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					
CzD*:											
Cullen-----	0-3	15-20	1.20-1.50	2.0-6.0	0.14-0.19	5.1-6.5	Low-----	0.20	5	3	1-2
	3-32	35-70	1.30-1.60	0.6-2.0	0.10-0.14	5.1-6.0	Moderate----	0.24			
	32-42	30-50	1.30-1.60	0.6-2.0	0.13-0.17	5.1-6.0	Moderate----	0.24			
	42-60	20-40	1.30-1.50	0.6-2.0	0.12-0.16	5.1-6.0	Moderate----	0.24			
Wynott-----	0-5	5-20	1.30-1.65	2.0-6.0	0.11-0.15	4.5-6.5	Low-----	0.28	3	3	.5-2
	5-10	20-35	1.25-1.50	0.6-2.0	0.15-0.17	4.5-6.5	Low-----	0.28			
	10-22	35-65	1.20-1.50	0.06-0.2	0.15-0.17	4.5-6.5	High-----	0.28			
	22-27	20-45	1.30-1.50	0.2-0.6	0.15-0.20	4.5-6.5	Low-----	0.28			
	27-60	---	---	0.00-0.06	---	---	-----	---			
DaB2, DaC2-----	0-7	27-35	1.30-1.55	0.6-2.0	0.14-0.18	4.5-6.5	Low-----	0.28	5	6	.5-2
Davidson	7-56	40-75	1.20-1.50	0.6-2.0	0.12-0.16	4.5-6.5	Low-----	0.24			
	56-75	25-60	1.20-1.50	0.6-2.0	0.12-0.18	4.5-6.5	Low-----	0.28			
EmD*:											
Enon-----	0-6	7-27	1.45-1.65	2.0-6.0	0.08-0.15	5.1-6.5	Low-----	0.15	3	8	.5-2
	6-39	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	Very high----	0.28			
	39-60	---	---	---	---	---	-----	---			
Mayodan-----	0-9	5-20	1.40-1.65	>6.0	0.04-0.08	4.5-6.5	Low-----	0.17	4	8	.5-2
	9-24	35-60	1.25-1.45	0.6-2.0	0.10-0.17	4.5-5.5	Moderate----	0.28			
	24-38	20-40	1.30-1.45	0.6-2.0	0.10-0.17	4.5-5.5	Low-----	0.32			
	38-62	---	---	---	---	---	-----	---			
EzB*:											
Enon-----	0-7	7-27	1.25-1.45	0.6-2.0	0.15-0.20	5.1-6.5	Low-----	0.32	3	5	.5-2
	7-33	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	Very high----	0.28			
	33-60	---	---	---	---	---	-----	---			
Wynott-----	0-5	5-20	1.30-1.65	2.0-6.0	0.11-0.15	4.5-6.5	Low-----	0.28	3	3	.5-2
	5-10	20-35	1.25-1.50	0.6-2.0	0.15-0.17	4.5-6.5	Low-----	0.28			
	10-22	35-65	1.20-1.50	0.06-0.2	0.15-0.17	4.5-6.5	High-----	0.28			
	22-27	20-45	1.30-1.50	0.2-0.6	0.15-0.20	4.5-6.5	Low-----	0.28			
	27-60	---	---	0.00-0.06	---	---	-----	---			
EzC*:											
Enon-----	0-6	7-27	1.45-1.65	2.0-6.0	0.08-0.15	5.1-6.5	Low-----	0.15	3	8	.5-2
	6-39	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	Very high----	0.28			
	39-60	---	---	---	---	---	-----	---			
Wynott-----	0-5	5-20	1.45-1.65	2.0-6.0	0.08-0.15	4.5-6.5	Low-----	0.10	2	8	.5-2
	5-10	20-35	1.25-1.50	0.6-2.0	0.15-0.17	4.5-6.5	Low-----	0.28			
	10-22	35-65	1.20-1.50	0.06-0.2	0.15-0.17	4.5-6.5	High-----	0.28			
	22-27	20-45	1.30-1.50	0.2-0.6	0.15-0.20	4.5-6.5	Low-----	0.28			
	27-60	---	---	0.00-0.06	---	---	-----	---			
FaB2-----	0-6	20-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-6.5	Low-----	0.32	5	5	.5-1
Faceville	6-63	35-55	1.25-1.60	0.6-2.0	0.12-0.18	4.5-5.5	Low-----	0.37			
GdD*:											
Goldston-----	0-3	5-25	1.40-1.60	2.0-6.0	0.06-0.12	3.5-6.5	Low-----	0.05	2	8	.5-2
	3-15	5-27	1.40-1.60	2.0-6.0	0.06-0.12	3.5-6.0	Low-----	0.05			
	15-25	---	---	---	---	---	-----	---			
	25	---	---	---	---	---	-----	---			
Badin-----	0-5	10-27	1.40-1.60	0.6-2.0	0.14-0.20	3.5-6.5	Low-----	0.15	3	5	1-2
	5-31	35-55	1.30-1.50	0.6-2.0	0.14-0.19	3.5-5.5	Moderate----	0.24			
	31-60	---	---	---	---	---	-----	---			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Wind erodi- bility group	Organic matter Pct
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					
HsA----- Hornsboro	0-5	8-20	1.40-1.60	0.6-2.0	0.17-0.25	4.5-7.8	Low-----	0.37	5	5	1-4
	5-55	35-60	1.40-1.60	0.06-0.2	0.11-0.18	4.5-8.4	High-----	0.32			
	55-69	22-40	1.40-1.75	0.2-0.6	0.10-0.17	6.1-8.4	Moderate----	0.24			
	69-80	---	---	---	---	---	-----	---			
JmA----- Johnston	0-25	7-18	1.25-1.45	2.0-6.0	0.20-0.26	4.5-5.5	Low-----	0.17	5	5	8-18
	25-45	5-18	1.30-1.55	2.0-6.0	0.10-0.20	4.5-5.5	Low-----	0.24			
	45-62	2-12	1.55-1.65	6.0-20	0.02-0.07	4.5-5.5	Low-----	0.17			
MaC, MaD----- Masada	0-6	10-20	1.20-1.50	2.0-6.0	0.10-0.17	4.5-6.5	Low-----	0.32	5	3	1-2
	6-47	27-55	1.30-1.60	0.6-2.0	0.10-0.17	4.5-5.5	Moderate----	0.24			
	47-70	25-40	1.30-1.60	0.6-2.0	0.10-0.17	4.5-5.5	Moderate----	0.24			
MbB2, MbC2----- Mayodan	0-5	20-35	1.35-1.55	0.6-2.0	0.12-0.22	4.5-6.5	Low-----	0.32	3	6	.5-2
	5-8	20-40	1.30-1.40	0.6-2.0	0.12-0.22	4.5-6.0	Low-----	0.32			
	8-43	35-60	1.25-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Moderate----	0.28			
	43-62	---	---	---	---	---	-----	---			
MbD----- Mayodan	0-9	5-20	1.40-1.65	2.0-6.0	0.11-0.17	4.5-6.5	Low-----	0.24	4	3	.5-2
	9-24	35-60	1.25-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Moderate----	0.28			
	24-38	20-40	1.30-1.45	0.6-2.0	0.10-0.17	4.5-5.5	Low-----	0.32			
	38-62	---	---	---	---	---	-----	---			
MdD----- Mayodan	0-9	5-15	1.40-1.65	>6.0	0.04-0.08	4.5-6.5	Low-----	0.17	4	8	.5-2
	9-24	35-60	1.25-1.45	0.6-2.0	0.10-0.17	4.5-5.5	Moderate----	0.28			
	24-38	20-40	1.30-1.45	0.6-2.0	0.10-0.17	4.5-5.5	Low-----	0.32			
	38-62	---	---	---	---	---	-----	---			
MeB2*, MeC2*: Mayodan-----	0-5	20-35	1.35-1.55	0.6-2.0	0.12-0.22	4.5-6.5	Low-----	0.32	3	6	.5-2
	5-8	20-40	1.30-1.40	0.6-2.0	0.12-0.22	4.5-6.0	Low-----	0.32			
	8-43	35-60	1.25-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Moderate----	0.28			
	43-62	---	---	---	---	---	-----	---			
Exway-----	0-4	27-40	1.25-1.60	0.6-2.0	0.14-0.20	4.5-7.3	Low-----	0.32	3	6	.5-2
	4-24	35-76	1.25-1.60	0.2-0.6	0.14-0.20	4.5-6.0	Moderate----	0.28			
	24-40	---	---	---	---	---	-----	---			
MnB----- McQueen	0-5	12-27	1.20-1.50	0.6-2.0	0.14-0.20	3.5-6.5	Low-----	0.37	5	6	.5-2
	5-55	35-55	1.20-1.50	0.06-0.2	0.14-0.18	3.5-5.5	Moderate----	0.37			
	55-62	27-40	1.20-1.50	0.2-0.6	0.14-0.18	3.5-5.5	Low-----	0.37			
NoA, NoB----- Norfolk	0-13	2-8	1.55-1.70	6.0-20	0.06-0.11	3.5-6.5	Low-----	0.17	5	2	.5-2
	13-16	18-35	1.30-1.65	0.6-2.0	0.10-0.18	3.5-5.5	Low-----	0.24			
	16-75	20-43	1.20-1.65	0.6-2.0	0.12-0.18	3.5-5.5	Low-----	0.24			
OrA, OrB----- Orangeburg	0-6	4-10	1.35-1.55	2.0-6.0	0.06-0.09	4.5-6.5	Low-----	0.10	5	2	.5-1
	6-16	7-18	1.50-1.65	2.0-6.0	0.09-0.12	4.5-6.0	Low-----	0.20			
	16-80	18-35	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	Low-----	0.24			
PaC, PaD----- Pacolet	0-7	8-20	1.00-1.50	2.0-6.0	0.06-0.10	4.5-6.5	Low-----	0.15	3	4	.5-2
	7-25	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low-----	0.28			
	25-60	15-35	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low-----	0.28			
PcA----- Paxville	0-12	8-20	1.30-1.40	2.0-6.0	0.12-0.16	3.5-6.5	Low-----	0.20	4	3	2-10
	12-43	18-35	1.20-1.50	0.6-2.0	0.12-0.18	3.5-5.5	Low-----	0.15			
	43-50	8-18	1.30-1.50	6.0-20	0.05-0.10	3.5-5.5	Low-----	0.10			
	50-60	---	---	---	---	---	-----	---			

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Wind erodi- bility group	Organic matter Pct
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					
PeA, PeB----- Peawick	0-7 7-13 13-75	10-20 18-35 35-60	1.20-1.30 1.30-1.50 1.30-1.50	0.6-2.0 0.6-2.0 <0.06	0.10-0.17 0.12-0.20 0.10-0.17	3.5-6.5 3.5-5.5 3.5-5.5	Low----- Low----- High-----	0.37 0.28 0.24	5	3	.5-2
PfA----- Peawick	0-9 9-75	10-25 35-60	1.20-1.30 1.30-1.50	0.6-2.0 <0.06	0.10-0.17 0.10-0.17	3.5-6.5 3.5-5.5	Low----- High-----	0.37 0.24	5	3	.5-2
PoA, PoB, PoC---- Pelion	0-13 13-29 29-41 41-75	2-10 18-35 18-50 10-40	1.35-1.75 1.40-1.60 1.40-1.75 1.40-1.60	>6.0 0.6-2.0 0.06-0.6 0.6-2.0	0.03-0.06 0.12-0.16 0.06-0.10 0.06-0.10	3.5-6.5 3.5-5.5 3.5-5.5 3.5-5.5	Low----- Low----- Low----- Low-----	0.15 0.17 0.20 0.15	3	2	.5-2
PrB*, PrC*: Pelion-----	0-13 13-29 29-41 41-75	2-10 18-35 18-50 10-40	1.35-1.75 1.40-1.60 1.40-1.75 1.40-1.60	>6.0 0.6-2.0 0.06-0.6 0.6-2.0	0.03-0.06 0.12-0.16 0.06-0.10 0.06-0.10	3.5-6.5 3.5-5.5 3.5-5.5 3.5-5.5	Low----- Low----- Low----- Low-----	0.15 0.17 0.20 0.15	3	2	.5-2
Urban land.											
PsC----- Pinkston	0-2 2-16 16-32 32-39 39	5-18 10-30 10-20 ---	1.20-1.40 1.20-1.50 1.20-1.50 ---	2.0-6.0 2.0-6.0 2.0-6.0 ---	0.04-0.08 0.06-0.18 0.05-0.16 ---	4.5-5.5 4.5-5.5 4.5-5.5 ---	Low----- Low----- Low----- ---	0.15 0.24 0.24 ---	2	8	.5-2
Pt*. Pits											
RvA----- Riverview	0-11 11-55 55-62	10-27 18-35 4-18	1.30-1.60 1.20-1.40 1.20-1.50	0.6-2.0 0.6-2.0 2.0-6.0	0.16-0.24 0.15-0.22 0.07-0.11	4.5-6.5 4.5-6.0 4.5-6.0	Low----- Low----- Low-----	0.32 0.24 0.17	5	5	.5-2
TbA, TbB----- Turbeville	0-6 6-75	3-18 30-60	1.35-1.55 1.35-1.50	2.0-6.0 0.6-2.0	0.08-0.15 0.13-0.16	4.5-6.5 4.5-5.5	Low----- Moderate-----	0.32 0.24	5	3	.5-2
Ud. Udorthents											
Ur*. Urban land											
UwB2, UwC2----- Uwharrie	0-6 6-50 50-62 62-80	27-35 35-60 27-50 ---	1.20-1.45 1.25-1.55 1.30-1.60 ---	0.6-2.0 0.6-2.0 0.6-2.0 ---	0.14-0.19 0.12-0.18 0.12-0.18 ---	4.5-6.5 4.5-6.0 4.5-6.0 ---	Low----- Moderate----- Moderate----- ---	0.37 0.32 0.28 ---	3	6	.5-2
UwD----- Uwharrie	0-6 6-45 45-52 52-60	10-27 35-60 27-50 ---	1.20-1.45 1.25-1.55 1.30-1.60 ---	0.6-2.0 0.6-2.0 0.6-2.0 ---	0.16-0.20 0.12-0.18 0.12-0.18 ---	4.5-6.5 4.5-6.0 4.5-6.0 ---	Low----- Moderate----- Moderate----- ---	0.43 0.32 0.28 ---	4	5	1-2
UxB2*, UxC2*: Uwharrie-----	0-6 6-50 50-62 62-80	27-35 35-60 27-50 ---	1.20-1.45 1.25-1.55 1.30-1.60 ---	0.6-2.0 0.6-2.0 0.6-2.0 ---	0.14-0.19 0.12-0.18 0.12-0.18 ---	4.5-6.5 4.5-6.0 4.5-6.0 ---	Low----- Moderate----- Moderate----- ---	0.37 0.32 0.28 ---	3	6	.5-2

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Wind erodi- bility group	Organic matter Pct
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					
UxB2*, UxC2*:											
Badin-----	0-3	27-40	1.20-1.45	0.6-2.0	0.14-0.19	3.5-6.5	Low-----	0.28	2	7	.5-2
	3-23	35-55	1.30-1.50	0.6-2.0	0.14-0.19	3.5-5.5	Moderate----	0.24			
	23-41	---	---	---	---	---	-----	---			
	41	---	---	---	---	---	-----	---			
UxD*:											
Uwharrie-----	0-6	10-27	1.20-1.45	0.6-2.0	0.16-0.20	4.5-6.5	Low-----	0.43	4	5	1-2
	6-45	35-60	1.25-1.55	0.6-2.0	0.12-0.18	4.5-6.0	Moderate----	0.32			
	45-52	27-50	1.30-1.60	0.6-2.0	0.12-0.18	4.5-6.0	Moderate----	0.28			
	52-60	---	---	---	---	---	-----	---			
Badin-----	0-5	10-27	1.40-1.60	0.6-2.0	0.14-0.20	3.5-6.5	Low-----	0.15	3	5	1-2
	5-31	35-55	1.30-1.50	0.6-2.0	0.14-0.19	3.5-5.5	Moderate----	0.24			
	31-60	---	---	---	---	---	-----	---			
WcB*:											
Wakulla-----	0-26	1-4	1.45-1.60	6.0-20	<0.05	4.5-6.5	Low-----	0.10	5	1	.5-1
	26-39	2-8	1.45-1.60	6.0-20	0.05-0.10	4.5-6.0	Low-----	0.10			
	39-85	2-8	1.45-1.60	6.0-20	<0.05	4.5-6.0	Low-----	0.10			
Candor-----	0-23	1-4	1.60-1.70	6.0-20	0.02-0.06	3.5-6.5	Low-----	0.10	5	1	.5-1
	23-35	6-12	1.55-1.70	6.0-20	0.06-0.10	3.5-5.5	Low-----	0.10			
	35-62	1-4	1.60-1.70	6.0-20	0.02-0.05	3.5-5.5	Low-----	0.10			
	62-80	10-35	1.35-1.60	0.6-2.0	0.12-0.16	3.5-5.5	Low-----	0.20			
WuB*:											
Wakulla-----	0-26	1-4	1.45-1.60	6.0-20	<0.05	4.5-6.5	Low-----	0.10	5	1	.5-1
	26-39	2-8	1.45-1.60	6.0-20	0.05-0.10	4.5-6.0	Low-----	0.10			
	39-85	2-8	1.45-1.60	6.0-20	<0.05	4.5-6.0	Low-----	0.10			
Candor-----	0-23	1-4	1.60-1.70	6.0-20	0.02-0.06	3.5-6.5	Low-----	0.10	5	1	.5-1
	23-35	6-12	1.55-1.70	6.0-20	0.06-0.10	3.5-5.5	Low-----	0.10			
	35-62	1-4	1.60-1.70	6.0-20	0.02-0.05	3.5-5.5	Low-----	0.10			
	62-80	10-35	1.35-1.60	0.6-2.0	0.12-0.16	3.5-5.5	Low-----	0.20			
Urban land.											

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			
AaB----- Ailey	B	None-----	---	---	4.0-6.0	Perched	Jan-Apr	>60	---	Moderate	Moderate.
AcB, AcC, AgC, AgD----- Ailey	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
AuB*, AuC*: Ailey----- Urban land.	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
BcB----- Badin	B	None-----	---	---	>6.0	---	---	20-40	Soft	High-----	High.
BgC*: Badin----- Goldston-----	B	None-----	---	---	>6.0	---	---	20-40	Soft	High-----	High.
	C	None-----	---	---	>6.0	---	---	10-20	Soft	Moderate	High.
CaC*: Candor----- Wakulla-----	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	High.
	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	High.
ChA----- Chewacla	C	Frequent---	Brief to long.	Nov-Apr	0.5-1.5	Apparent	Nov-Apr	>60	---	High-----	Moderate.
CrB----- Creedmoor	C	None-----	---	---	1.5-2.0	Perched	Jan-Mar	>60	---	High-----	High.
CzD*: Cullen----- Wynott-----	C	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
	C	None-----	---	---	>6.0	---	---	20-40	Soft	High-----	Moderate.
DaB2, DaC2----- Davidson	B	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
EmD*: Enon----- Mayodan-----	C	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
	B	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
EzB*, EzC*: Enon----- Wynott-----	C	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
	C	None-----	---	---	>6.0	---	---	20-40	Soft	High-----	Moderate.
FaB2----- Faceville	B	None-----	---	---	>6.0	---	---	>60	---	Low-----	Moderate.
GdD*: Goldston----- Badin-----	C	None-----	---	---	>6.0	---	---	10-20	Soft	Moderate	High.
	B	None-----	---	---	>6.0	---	---	20-40	Soft	High-----	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			
HsA----- Hornsboro	D	None-----	---	---	1.0-1.5	Apparent	Nov-May	>60	---	Low-----	Low.
JmA----- Johnston	D	Frequent----	Brief to long.	Nov-Jul	+1-1.5	Apparent	Nov-Jun	>60	---	High-----	High.
MaC, MaD----- Masada	C	None-----	---	---	>6.0	---	---	>60	---	High-----	High.
MbB2, MbC2, MbD, MdD----- Mayodan	B	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
MeB2*, MeC2*: Mayodan-----	B	None-----	---	---	>6.0	---	---	>60	---	High-----	Moderate.
Exway-----	B	None-----	---	---	>6.0	---	---	20-40	Soft	High-----	Moderate.
MnB----- McQueen	C	None-----	---	---	5.0-6.0	Apparent	Jan-Mar	>60	---	Moderate	Moderate.
NoA, NoB----- Norfolk	B	None-----	---	---	4.0-6.0	Apparent	Jan-Mar	>60	---	Moderate	High.
OrA, OrB----- Orangeburg	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
PaC, PaD----- Pacolet	B	None-----	---	---	>6.0	---	---	>60	---	High-----	High.
PcA----- Paxville	B/D	None-----	---	---	+1-1.0	Apparent	Nov-Apr	>60	---	High-----	High.
PeA, PeB----- Peawick	D	None-----	---	---	1.5-3.0	Perched	Nov-Mar	>60	---	High-----	High.
PfA----- Peawick	D	Rare-----	---	---	1.5-3.0	Perched	Nov-Mar	>60	---	High-----	High.
PoA, PoB, PoC----- Pelion	B/D	None-----	---	---	1.0-2.5	Perched	Nov-Apr	>60	---	High-----	High.
PrB*, PrC*: Pelion-----	B/D	None-----	---	---	1.0-2.5	Perched	Nov-Apr	>60	---	High-----	High.
Urban land.											
PsC----- Pinkston	B	None-----	---	---	>6.0	---	---	20-40	Hard	Low-----	High.
Pt*. Pits											
RvA----- Riverview	B	Occasional	Brief-----	Dec-Mar	3.0-5.0	Apparent	Dec-Mar	>60	---	Low-----	Moderate.
TbA, TbB----- Turbeville	C	None-----	---	---	>6.0	---	---	>60	---	High-----	High.
Ud. Udorthents											

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>			
Ur*. Urban land											
UwB2, UwC2, UWD--- Uwharrie	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
UxB2*, UxC2*, UxD*: Uwharrie-----	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Badin-----	B	None-----	---	---	>6.0	---	---	20-40	Soft	High-----	High.
WcB*: Wakulla-----	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	High.
Candor-----	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	High.
WuB*: Wakulla-----	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	High.
Candor-----	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	High.
Urban land.											

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

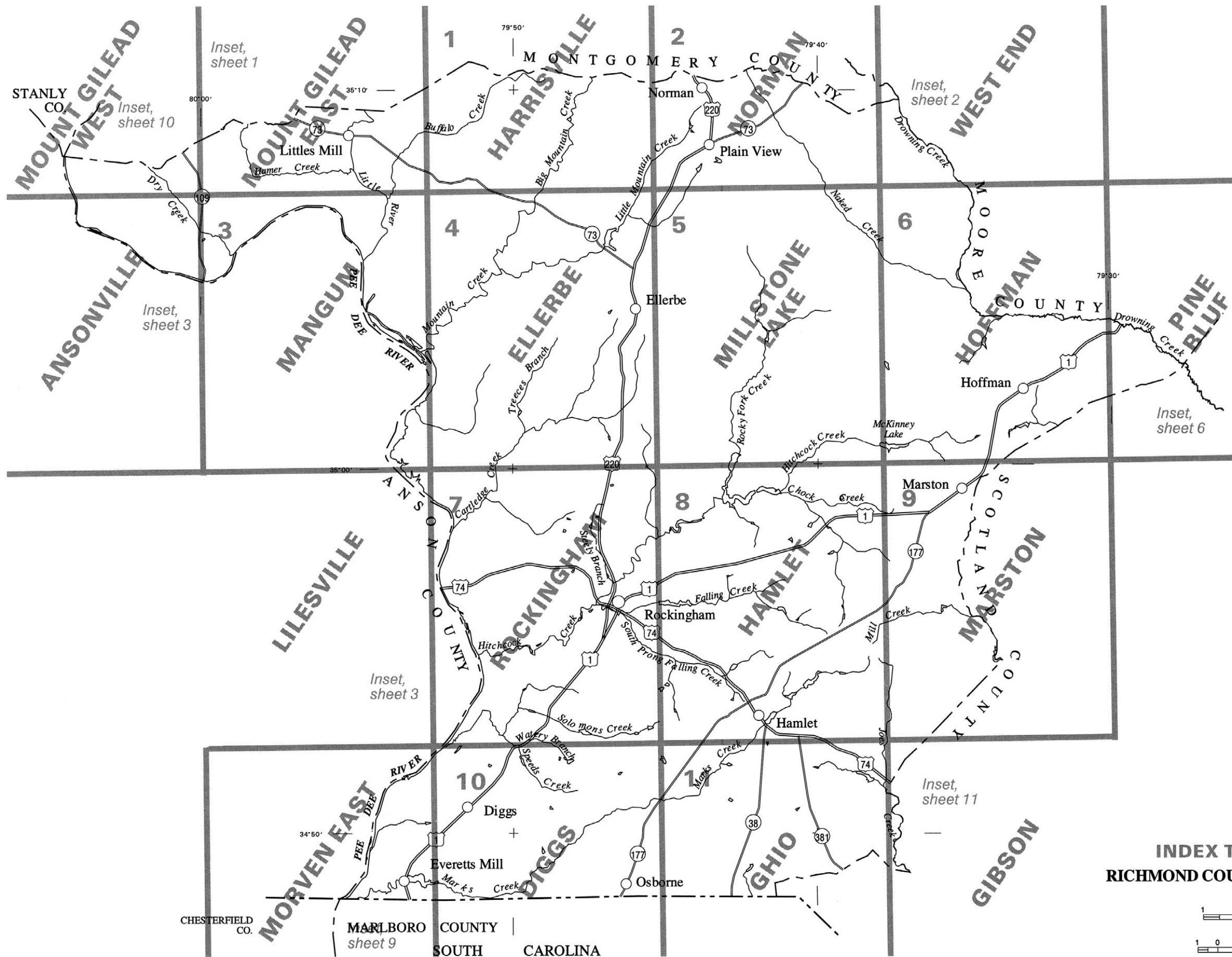
Soil name	Family or higher taxonomic class
Ailey-----	Loamy, siliceous, thermic Arenic Kanhapludults
Badin-----	Clayey, mixed, thermic Typic Hapludults
Candor-----	Sandy, siliceous, thermic Arenic Paleudults
Chewacla-----	Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts
Creedmoor-----	Clayey, mixed, thermic Aquic Hapludults
Cullen-----	Clayey, mixed, thermic Typic Hapludults
Davidson-----	Clayey, kaolinitic, thermic Rhodic Kandiudults
*Enon-----	Fine, mixed, thermic Ultic HapludalFs
Exway-----	Clayey, mixed, thermic Typic Rhodudults
Faceville-----	Clayey, kaolinitic, thermic Typic Kandiudults
Goldston-----	Loamy-skeletal, siliceous, thermic, shallow Typic Dystrochrepts
Hornsboro-----	Fine, mixed, thermic Aeric Albaqualfs
Johnston-----	Coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts
Masada-----	Clayey, mixed, thermic Typic Hapludults
Mayodan-----	Clayey, mixed, thermic Typic Hapludults
McQueen-----	Clayey, mixed, thermic Typic Hapludults
Norfolk-----	Fine-loamy, siliceous, thermic Typic Kandiudults
Orangeburg-----	Fine-loamy, siliceous, thermic Typic Kandiudults
Pacolet-----	Clayey, kaolinitic, thermic Typic Kanhapludults
Paxville-----	Fine-loamy, siliceous, thermic Typic Umbraquults
Peawick-----	Clayey, mixed, thermic Aquic Hapludults
Pelion-----	Fine-loamy, siliceous, thermic Aquic Kanhapludults
Pinkston-----	Coarse-loamy, mixed, thermic Ruptic-Ultic Dystrochrepts
Riverview-----	Fine-loamy, mixed, thermic Fluventic Dystrochrepts
Turbeville-----	Clayey, mixed, thermic Typic Kandiudults
Udorthents-----	Udorthents
Uwharrie-----	Clayey, mixed, thermic Typic Hapludults
Wakulla-----	Sandy, siliceous, thermic Psammentic Hapludults
Wynott-----	Fine, mixed, thermic Typic HapludalFs

Accessibility Statement

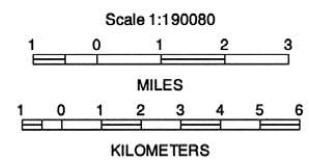
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INDEX TO MAP SHEETS
RICHMOND COUNTY, NORTH CAROLINA



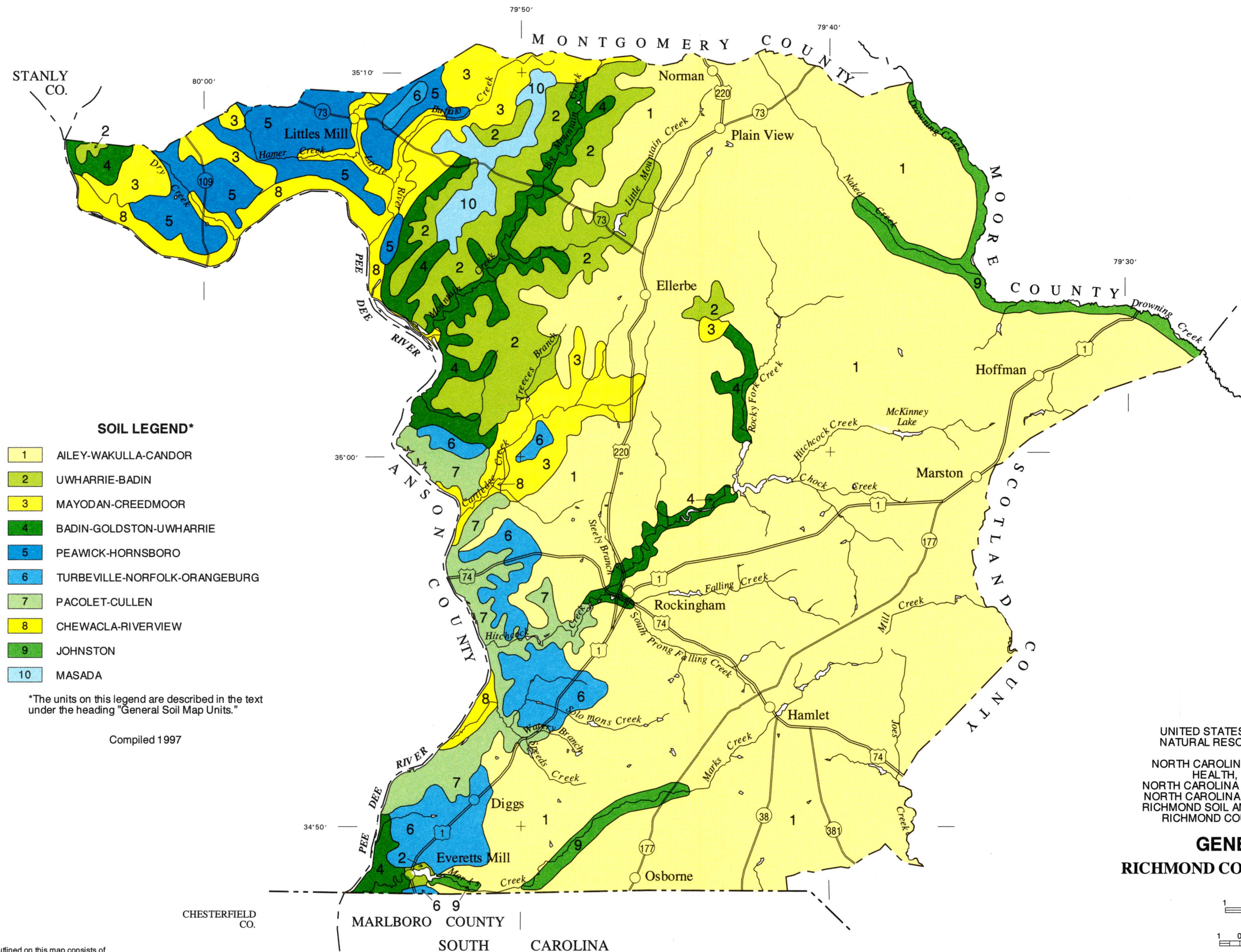
SOIL LEGEND

Map unit symbols and names are listed in alphabetical order, map symbols consist of letters or a combination of letters and numbers. The first letter is capitalized and is the first letter of the series name (or the name of the higher classification). The second letter is lowercase. The third letter is capitalized and indicates the class of slope. The number 2 at the end of a map unit symbol indicates a moderately eroded phase.

SYMBOL	NAME
AaB	Ailey sand, moderately wet, 0 to 6 percent slopes
AcB	Ailey loamy sand, 0 to 8 percent slopes
AcC	Ailey loamy sand, 8 to 15 percent slopes
AgC	Ailey gravelly loamy sand, 8 to 15 percent slopes
AgD	Ailey gravelly loamy sand, 15 to 25 percent slopes
AuB	Ailey-Urban land complex, 0 to 8 percent slope
AuC	Ailey-Urban land complex, 8 to 15 percent slopes
BcB	Badin channery silt loam, 2 to 8 percent slopes
BgC	Badin-Goldston complex, 8 to 15 percent slopes
CaC	Candor and Wakulla soils, 8 to 15 percent slopes
ChA	Chewacla loam, 0 to 2 percent slopes, frequently flooded
CrB	Creedmoor fine sandy loam, 2 to 8 percent slopes
CzD	Cullen-Wynott complex, 15 to 35 percent slopes
DaB2	Davidson clay loam, 2 to 8 percent slopes, eroded
DaC2	Davidson clay loam, 8 to 15 percent slopes, eroded
EmD	Enon-Mayodan complex, 15 to 35 percent slopes, very stony
EzB	Enon-Wynott complex, 2 to 8 percent slopes
EzC	Enon-Wynott complex, 4 to 15 percent slopes, very bouldery
FaB2	Faceville sandy clay loam, 2 to 6 percent slopes, eroded
GdD	Goldston-Badin complex, 15 to 55 percent slopes
HsA	Hornsboro silt loam, 0 to 2 percent slopes
JmA	Johnston mucky loam, 0 to 2 percent slopes, frequently flooded
MaC	Masada sandy loam, 8 to 15 percent slopes
MaD	Masada sandy loam, 15 to 25 percent slopes
MbB2	Mayodan sandy clay loam, 2 to 8 percent slopes, eroded
MbC2	Mayodan sandy clay loam, 8 to 15 percent slopes, eroded
MbD	Mayodan sandy loam, 15 to 25 percent slopes
MdD	Mayodan sandy loam, 15 to 25 percent slopes, stony
MeB2	Mayodan-Exway complex, 2 to 8 percent slopes, eroded
MeC2	Mayodan-Exway complex, 8 to 15 percent slopes, eroded
MnB	McQueen loam, 1 to 6 percent slopes
NoA	Norfolk loamy sand, 0 to 2 percent slopes
NoB	Norfolk loamy sand, 2 to 6 percent slopes
OrA	Orangeburg loamy sand, 0 to 2 percent slopes
OrB	Orangeburg loamy sand, 2 to 6 percent slopes
PaC	Pacolet gravelly sandy loam, 8 to 15 percent slopes
PaD	Pacolet gravelly sandy loam, 15 to 35 percent slopes
PcA	Paxville fine sandy loam, 0 to 2 percent slopes
PeA	Peawick fine sandy loam, 0 to 2 percent slopes
PeB	Peawick fine sandy loam, 2 to 6 percent slopes
PIA	Peawick silt loam, 0 to 3 percent slopes, rarely flooded
PoA	Pelion loamy sand, 0 to 2 percent slopes
PoB	Pelion loamy sand, 2 to 8 percent slopes
PoC	Pelion loamy sand, 8 to 15 percent slopes
PrB	Pelion-Urban land complex, 0 to 8 percent slopes
PrC	Pelion-Urban land complex, 8 to 15 percent slopes
PsC	Pinkston fine sandy loam, 4 to 15 percent slopes, very stony
Pt	Pits, quarries
RvA	Riverview loam, 0 to 2 percent slopes, occasionally flooded
TbA	Turbeville sandy loam, 0 to 2 percent slopes
TbB	Turbeville sandy loam, 2 to 8 percent slopes
Ud	Udorthents, loamy
Ur	Urban land
UwB2	Uwharrie clay loam, 2 to 8 percent slopes, eroded
UwC2	Uwharrie clay loam, 8 to 15 percent slopes, eroded
UwD	Uwharrie loam, 15 to 25 percent slopes
UxB2	Uwharrie-Badin complex, 2 to 8 percent slopes, eroded
UxC2	Uwharrie-Badin complex, 8 to 15 percent slopes, eroded
UxD	Uwharrie-Badin complex, 15 to 25 percent slopes
WcB	Wakulla and Candor soils, 0 to 8 percent slopes
WuB	Wakulla-Candor-Urban land complex, 0 to 10 percent slopes

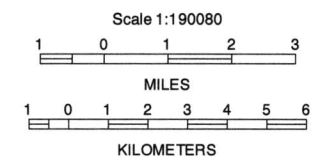
CONVENTIONAL AND SPECIAL
SYMBOLS LEGEND

CULTURAL FEATURES		SPECIAL SYMBOLS FOR SOIL SURVEY	
BOUNDARIES		SOIL DELINEATIONS AND SYMBOLS	OrA PoA
National, state, or province		ESCARPMENTS	
County or parish		SHORT STEEP SLOPE	
Field sheet matchline and neatline		GULLY	
		SOIL SAMPLE (normally not shown)	
		MISCELLANEOUS	
AD HOC BOUNDARY (label)		Gravelly spot	
Small airport, airfield, park, oilfield, cemetery, or flood pool		Rock outcrop (includes sandstone and shale)	
STATE COORDINATE TICK 1 890 000 FEET		Sandy spot	
ROADS		Severely eroded spot	
Divided (median shown if scale permits)		Stony spot, very stony spot	
Other roads			
ROAD EMBLEM & DESIGNATIONS			
Federal			
State			
Secondary			
		LAKES, PONDS AND RESERVOIRS	
		Perennial	
		MISCELLANEOUS WATER FEATURES	
DAMS		Wet spot	
Large (to scale)			
Medium or Small (Named where applicable)			
PITS			
Gravel pit			
Mine or quarry			



UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
in cooperation with
NORTH CAROLINA DEPARTMENT OF ENVIRONMENT,
HEALTH, AND NATURAL RESOURCES
NORTH CAROLINA AGRICULTURAL RESEARCH SERVICE
NORTH CAROLINA COOPERATIVE EXTENSION SERVICE
RICHMOND SOIL AND WATER CONSERVATION DISTRICT
RICHMOND COUNTY BOARD OF COMMISSIONERS

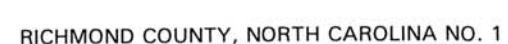
GENERAL SOIL MAP **RICHMOND COUNTY, NORTH CAROLINA**



Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



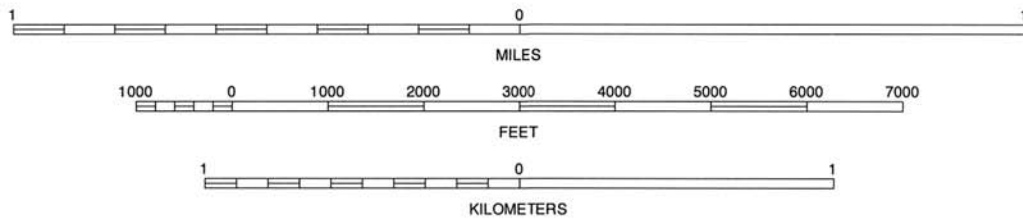
NORTH

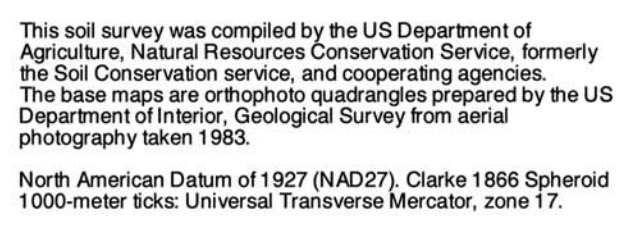




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North American Datum of 1927 (NAD27), Clarke 1866 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.







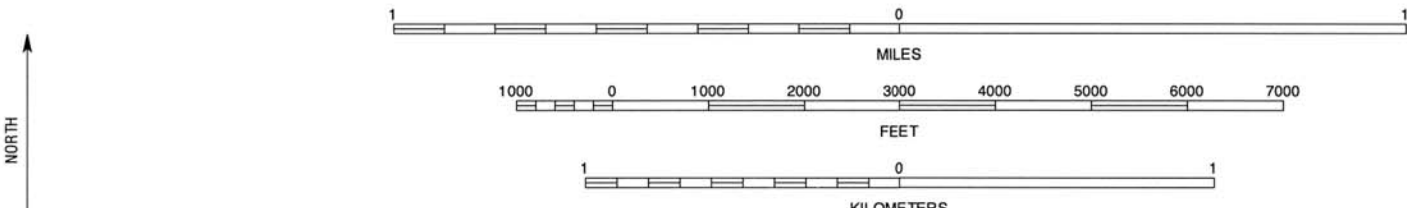
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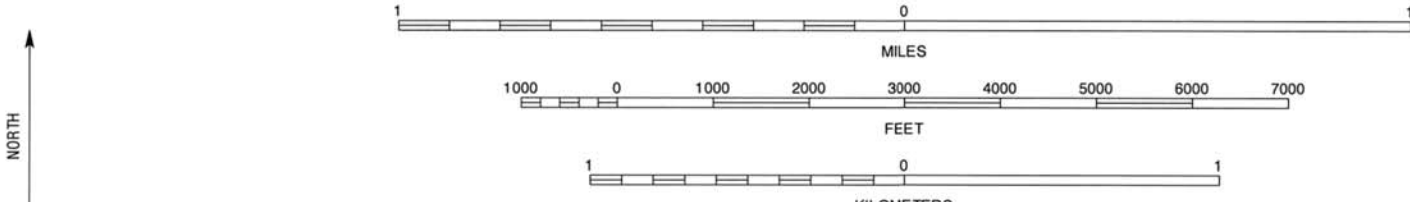






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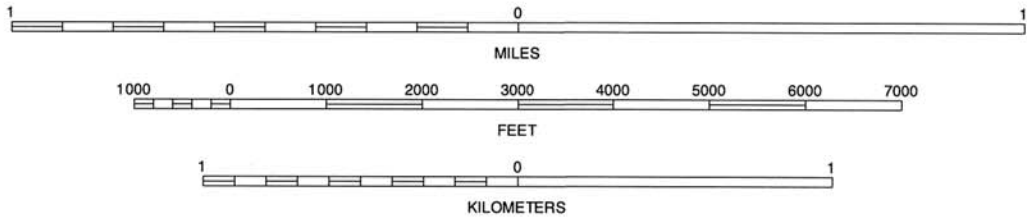


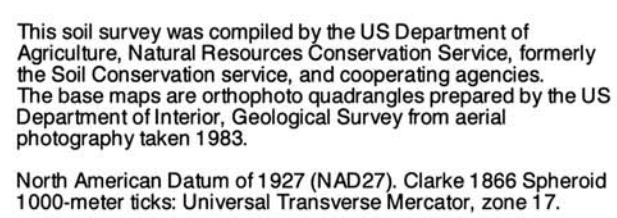


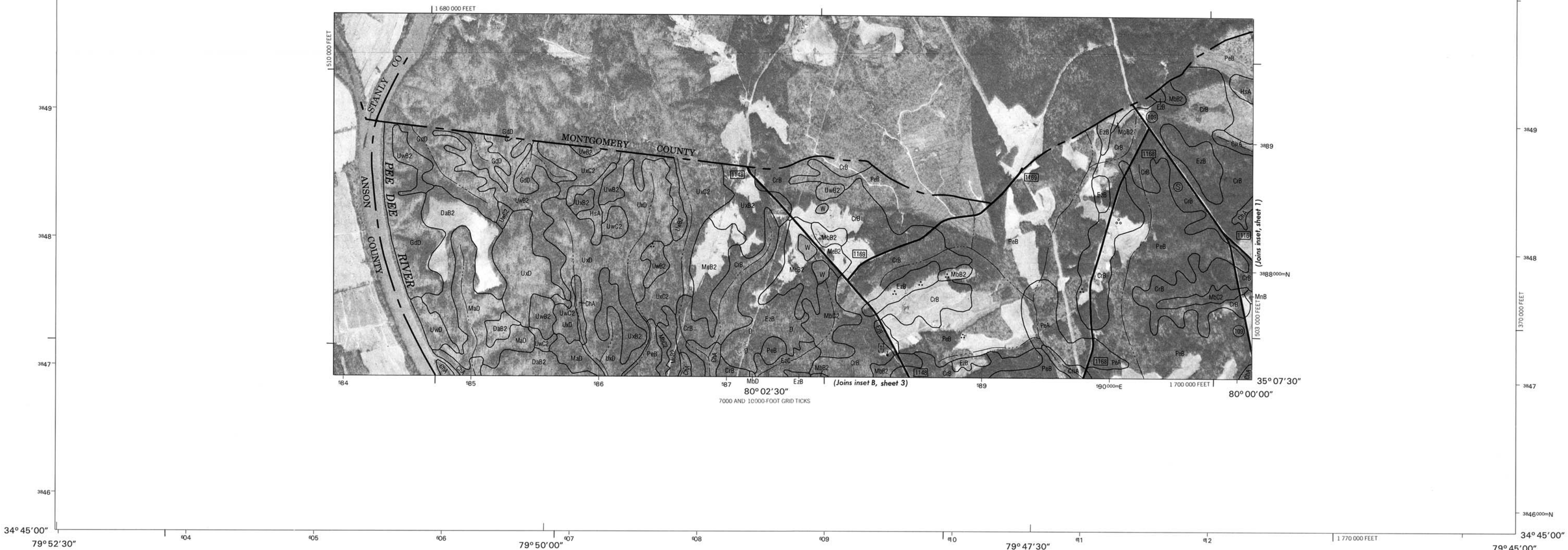
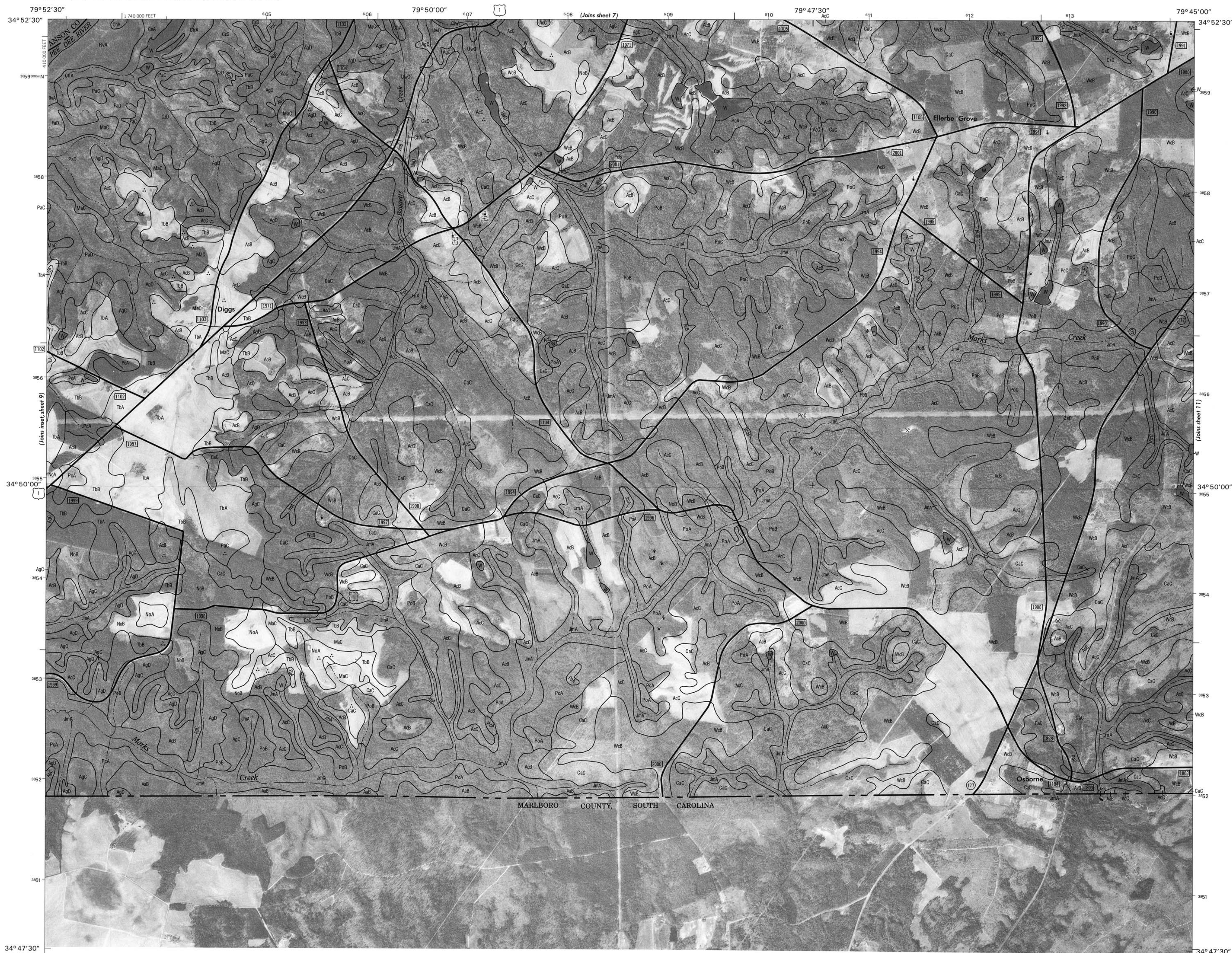
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NORTH

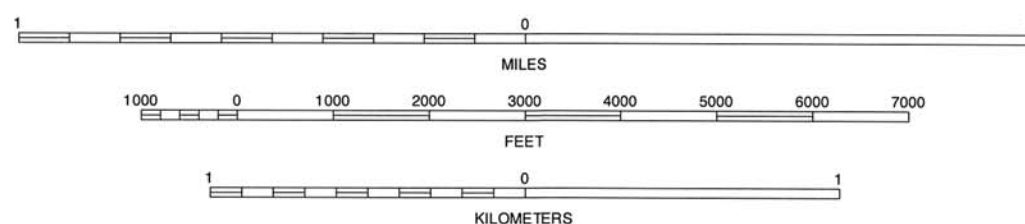






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NORTH

